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CANADIAN PUBLIC HEALTH JOURNAL

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The Administrative Control of the Diphtheria Toxoid Campaign in Toronto*

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TO a certain extent the success of a campaign undertaken by a department of health depends on its organization. Every campaign presents new problems, requiring an organization differing in many particulars from others. The purpose, the place, the general background, the relationship of the department to the public and to the profession are features which must be considered by the administrative officer in making his plans.

In Toronto, diphtheria has been one of the most important causes of illness and death in children. There has been a very definite decline in the mortality during the last thirty years, but only a very slight decline in the morbidity. The decline in mortality has not been regular but marked, at intervals of about ten years, by very definite peaks, in the last of which, in 1920, there were 224 deaths, giving a rate of 43.8 per 100,000. This high death-rate occurred in spite of the fact that there had been free distribution of antitoxin in Ontario since 1916. Toxin-antitoxin, or after 1924, toxoid, had not been used to any appreciable extent. Even after free distribution by the Province, beginning in 1920, there had been very little demand for active immunization, so it could not be said to be accountable to any significant extent for the decline after 1920. After 1924, when the mortality rate was 8.3, the diphtheria mortality increased again so that in 1926 the rate was 16, or double that of 1924. It might be fairly expected from the previous experience, in which the peaks came about the tenth year, that the increase would continue and that the deaths from diphtheria about 1930 would be higher than in 1926.

The profession had been advised by newspaper publicity and by personal letters from Dr. Hastings, then Medical Officer of Health of Toronto, of the facts of the situation and the members were urged, individually and as a body, to advise the active immunization of children in their practice. The data indicate, however, that such efforts in the control of diphtheria previous to 1926 were not successful. In 1925, Toronto faced an increasing death-rate from diphtheria—a rate already very high, and radical changes were considered

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necessary if diphtheria were to be controlled. This fact was realized by the Medical Officer of Health and his staff who, up till then, had hesitated to act in more than an advisory capacity, always advocating that such preventive medicine was best practised by the family physician.

With the opening of the schools in the fall of 1926, diphtheria showed the customary seasonal rise. A severe epidemic occurred in one school which for years had had repeated epidemics. The matter was brought to a climax by a formal request from the principal of the school asking if more effective measures could not be used to control the situation, cut down the time lost through quarantine of contacts and enable the school work to proceed without the interruptions—and, too often, deaths among the pupils. Dr. Hastings finally decided that, as there was little evidence of any general immunization by the family physician and as many of the children in the schools came from families who did not have a family physician but received their medical attention largely through hospital clinics, etc., general immunization of school children in Toronto should be offered by his department. The Department of Education gave their hearty consent for carrying out the work in the schools.

Toronto is a city of approximately 550,000. Its school population in public and separate schools numbers about 90,000 among 130 schools. The school medical service is carried out by the health department. For health administration the city is divided into districts, each of which has a district medical officer in charge, a district superintendent of nurses and eight to ten nurses. The district medical officer is responsible for the general supervision and communicable disease control in his district. He is also responsible for the complete physical examination of each school child at least twice in its school life and for checking the correction of defects, etc. He attends indigents and workmen's compensation cases, and supervises day nurseries, creches and child health centres. The routine duties of the medical officer are, therefore, very heavy, and under the circumstances it was not feasible to add more to his already full time-table.

Preliminary observations of the work likely to be entailed were made at the school in which the principal had requested active immunization and which had an enrolment of about 1,000. Various physicians of the Department carried out part of the work, observed the work of others and made suggestions where they saw fit. After due consideration it was decided that the administration of toxoid should be carried out by a special team moving from school to school.

For some weeks preceding the actual institution of the campaign, more intensive publicity was given to the whole subject of diphtheria, including active immunization. Special articles and even editorials were written for the daily newspapers. The *Health Bulletin*, Dr. Hasting's personal weekly message to the citizens of Toronto, told of the necessity for and manner of immunization. Public addresses were delivered on the subject. The assistance of voluntary agencies and social organizations was solicited. Throughout all this publicity the dominant note was that of urging the parents to take their children to the family physician.

THE FIELD WORK

Personnel, etc.

In December, 1926, the departmental organization was ready to

begin active work. Three physicians, employed on a part-time basis, two working in the mornings and one in the afternoons, were made responsible for giving all tests, reading all tests, giving the toxoid, and, if necessary, attending any cases where a reaction followed and which were referred to them by the nurses. With the physicians were five nurses on a full time basis. One of the nurses was responsible for the team's time-table, the equipment (listed below), the material, and for keeping charge of all records. A nurse who had been a district superintendent and was thoroughly familiar with all school procedure was chosen for this important work. The preparation work, follow-up work, and actual nursing attention such as preparing the arms of the children with alcohol, etc., were divided among the other nurses. The equipment consisted of the following:

1—Electric sterilizer; 2—Skin test syringes in two colours—one colour for the Schick test and one for dilute toxoid test material. These syringes were of 1 cc. capacity, the barrel graduated in tenths; 3—Needles were of Firth stainless steel, gauge 26, length 1/2 inch (these were used for both toxoid and test materials); 4—Record syringes of 5 cc. capacity for administering toxoid, the needle being changed and boiled after each use; 5—Long needles of large calibre for filling syringes from ampoules; 6—Alcohol. Rubbing alochol was used for cleansing the skin (ether was tried but it turned many children ill); 7—*General Supplies*—Gauge, cotton, gowns, towels, paper cups, ether for cleaning needles, stationery, etc., were supplied, as well as the car-fare for the nurses.

The above supplies were packed in a suitable box, making a handy, complete portable outfit.

Consent of Parents

The Health Department, in keeping with their policy throughout all school work, required written consent from the parent of the child before testing or immunizing. A pamphlet was accordingly prepared on which the advantages of immunization were plainly stated and on the opposite side of which (detachable) the parent was asked to sign his name indicating one of two conditions,—either giving permission to the department to carry out the necessary tests and immunization, or indicating that the child would be taken to the family physician for that purpose. It was thought that the card served fully as much as a means of bringing the child to the family physician as to the school clinic. In fact, the original intention was that only children who could not afford the costs of the family physician would ask for the work to be carried on in the school.

Records

Besides the consent leaflet, which on receipt was filed for permanent record, other forms were necessary. A class-room record sheet for the necessary details of each pupil for whom consent was obtained, was useful for quickly making records in the school. A card, $5'' \times 8''$, for each pupil tested or immunized, on which were entered all details of testing, immunization and following history, was used for records of a permanent character. On the back of this card notes in regard to subsequent history were to be made. The first entries on these cards,

i.e., the preliminary tests and the first dose of toxoid, were copied from the class-room record sheets by a clerk in the central office; the later entries were made by the nurse making the records directly when the doses were given. These cards were filed alphabetically, at first for the school, then for the district and finally for the city. A reappointment card was found very necessary. When, as was very often the case, pupils were not present at the scheduled time through sickness or other causes, this card was sent to the parent notifying him of the necessity of properly completing the immunization and advising him where the child should go to get the missed inoculations. The record card of that child was sent to the specified clinic to be filled in there. Another card, the purpose of which was mainly to check the efficiency of toxoid, was used. This was and is now filled in by the quarantine inspector upon his initial visit of investigation to a supposed diphtheria case, and states whether or not the patient (diphtheria) had had toxoid, and if so where, and whether he is, at the time of the visit, a case or carrier. All these inspectors' cards, as they were brought in, were checked against the immunization record cards on which an entry was made if any case or carrier was found among them, and, if it was stated that toxoid had been administered by a private physician, the accuracy of the information and dose were checked by communicating by telephone with the physician. As well as this check, every reported case of diphtheria was checked against our files of children passing through the clinics and record of case or carrier made on the record cards when indicated.

The Routine in the School

In order that the work in the clinic might progress as speedily and efficiently as possible and with the minimum of interference with school work, a definite routine was developed and followed. Shortly before the team visited a school, through the co-operation of the principal and the school nurse the pamphlets for the parents' consent were distributed by the teacher to the pupils. On the return of these, signed, the names and ages of the children for whom consent for immunization was given, were entered by the teacher of each class on two class-rooom record sheets, one for girls and one for boys. When the team visited the school the names were called and the children assembled in lines in the order on this record sheet. Each child was given his A.D.P. card and his consent card and the nurse conducted the groups in orderly lines to the medical room. This not only allowed the teacher to continue her class (on the average about one-third of the class received immunization) but was a wise precautionary measure in the case of any child fainting when returning to the class-room.

In the medical room there were two tables, at one of which the nurse making the records sat. At the other, equipped with sterile towels, sterilizers, syringes (two 1 cc. and two 5 cc. capacity), about two dozen needles, etc., were one or two physicians and two nurses, one of whom was responsible for the supply of sterile needles and filled syringes. The children, on entering, presented their two cards to the record nurse. As she checked these with the corresponding entry on the class-room record sheet, the child passed on to the

second nurse, who exposed the upper arm, prepared it with alcohol, and as the child was inoculated by the physician the record nurse made the entry on the record sheet. When the complete modified Schick test was being given, the child passed between two physicians, presenting one arm to each; one injected the Schick toxin and the other the diluted toxoid. When tests were read two physicians were again employed. The name of the child was first checked as he passed the record nurse, the arms were exposed and prepared by the second nurse, one physician observed the reactions and called aloud the measurements to be recorded by the nurse, and the second physician gave the immunizing treatment indicated by the test. Following this plan, and provided the principal and teachers gave good co-operation in the progress from class to class, a rate of one hundred children an hour was not hard to maintain. When the subsequent immunizing doses were given the same procedure was followed, the children being assembled in the same order by the record sheet. Here, where there was only one inoculation to be given and no test to be read, more than one hundred per hour could be accommodated.

The Extent of the Campaign

In two and a half school years the whole city was covered. In other words, approximately 40,000 children have passed through the hands of the physicians assigned to the work. Over 30,000 were given the dilute toxoid reaction test (the control test of the modified Schick test). Over 19,000 were given complete modified Schick tests; 17,745 were given three doses of toxoid; 9,502 were given two doses and 1,541 were given one dose. We have been able thus to reach more than one-third of our school population. The number of consents secured varied greatly among the different schools. More than half the cards sent out were not returned. Eight per cent, approximately, were returned signifying the intention of the parents to have the children immunized by the family physician. On the whole, the schools in which a large percentage of consents was obtained, showed a comparatively large percentage in which the family physician was to be consulted. In some schools the response was very poor and in these, in some instances, not one card gave an indication of utilizing the services of the family physician. The response did not vary to any definite extent with the district of the city, though we got fewer consents in North Toronto, possibly because, in that section a higher percentage of children had been immunized by their family physicians. The degree of success depended to a great extent on the activities of the school principal, as he alone could influence the teachers in regard to the necessity of getting a good response—a high percentage of signed consents. Many of the principals were anxious to have the work done. Some bore the presence of the toxoid team in their schools with visible perturbation; especially was this the case where the principal was a Christian Scientist.

But in a first campaign of this character, in a city the size of Toronto, we consider that having reached between thirty and forty per cent of the school children is a degree of success for which we might scarcely have hoped. How many were influenced to go to their family physician

by the newspaper publicity, by the pamphlets, though they failed to give any indication to us, and by their playmates being rendered immune to diphtheria, can only be surmised. Undoubtedly the number, if it could be learned, would be significant. The school population now having been covered by immunization as far as was possible by this campaign, the immunization of the incoming children each year will be the next consideration.

LESSONS LEARNED IN THE CAMPAIGN

On the Selection of Children

During the course of the work, we found it advisable to make certain changes. The organization was sufficiently elastic to allow any such changes without interference in any way with the general working out of the programme. In the first period it was decided to select children for immunization on the basis of the modified Schick test. We found, however, that this offered difficulties. In short, we were unable to read the reactions with, what we considered, sufficient accuracy. Even the regular Schick test—*i.e.*, toxin and heated toxin for a control, requires experience to interpret and even with experience there is always a certain percentage who react to both the active toxin and the heated toxin and therefore cannot be read with certainty. With the modified test, *i.e.*, toxin and diluted toxoid for a control, the diluted toxoid being really a test for reactors, the number of readings difficult or impossible of accurate interpretation is increased. This is due to the fact that the toxoid, though diluted, contains not an equal quantity of protein to that in the toxin, but a much greater quantity; the reaction elicited by the toxoid is entirely a reaction to the protein. When a reaction is obtained at the same time at the site of injection of the toxin, it is impossible to say to what factor it is due, to the toxic action of the toxin, and therefore indicating susceptibility, or to the protein in the toxin therefore indicating sensitivity. Possibly repeated observations might have made possible an accurate interpretation of a greater number but these could not be made in a widespread campaign of this character. Besides this problem there is the fact that the toxin in the Schick test may not be stable under certain conditions and may so deteriorate that it fails to elicit a reaction. Therefore, owing to the inability to interpret many reactions, and to the possibility of error due to the technique or to the deterioration of the toxin, the question might well be asked, Why do the Schick test? As it appeared to be an added expense with only partial returns and with possible errors, it was decided to abandon it. It must be emphasized that this conclusion is not made with reference to the original Schick test, *i.e.*, diphtheria toxin controlled by heated toxin. We used only the modified test in which, as stated, diluted toxoid is used as the control. The purpose of using this modification is to pick out reactors and, as will be shown later, the test fulfils the purpose for which it was developed.

The Reaction Test

The preliminary observations made by the regular staff of the department at the commencement of the work indicated that reactions to toxoid did not occur in any significant number in children under eight years of age and that that age group might be given toxoid without preliminary testing. Wider experience taught us, however, that occasional reactions did occur in children under eight years and, as all reactions are extremely important from an administrative standpoint, it was decided, after two months' experience, that toxoid should be given without preliminary testing only to children under six years. In other words, only pre-school children should be given toxoid without first having a reaction test. The dilute toxoid reaction test was given, therefore, to all school children before being given immunization.

Basing our judgment on our experience, we consider the reaction test to be of very great importance. On the reaction elicited by it, the subsequent treatment was based. All children who did not show a marked reaction to the reaction test, as indicated below, were given toxoid although we knew that some of them were probably immune. From any standpoint, the giving of toxoid to a few who did not require it, was not important; not missing any children who needed it, and avoiding reactions in those to whom it was given, were much more important considerations. To have had a very few children contract diphtheria after being told they were immune, or to have had severe reactions following toxoid inoculations would have been a serious setback to the campaign. Both these possibilities were practically eliminated by using the dilute toxoid test alone and giving toxoid to all not showing marked reactions.

Experience taught us to read the reaction test so that we could, with a very fair degree of accuracy, gauge the reaction that would follow an immunizing dose. A reaction showing an area of hyperemia up to 10 mm. in diameter, with no induration, was recorded as 1 plus and indicated, as we learned, that the child would not give any marked reaction to the immunizing doses. Children showing such reactions were given, accordingly, the regular immunizing doses. Those with a larger area of hyperemia but with a little induration were recorded as 2 plus and the children in this group, on account of the possibility of them showing reactions to the immunizing doses, were given smaller doses of 1/10 cc., 2/10 cc. and 5/10 cc. That this dosage, in one showing a reaction, may be sufficient to induce immunity, is suggested by the work of Moloney and Fraser and also by Dudley's observations. The group so reacting, with a 2 plus reading, and treated with the reduced dosage, amounted to 5 or 6 per cent of the children. Approximately 11 per cent showed more reaction to the intradermal test in the form of definite induration. These children, it was learned, if given regular immunizing doses, were liable to give a marked reaction. This was to be avoided, largely on account of unfavourable publicity

which it might cause. That such reactors might be successfully immunized by very small doses was recognized, but their immunization without the likelihood of severe reactions would require such personal attention as could not be given by the general organization. There was evidence from the work of Dudley, and Moloney and Fraser that many of these reactors were already immune. The decision, therefore, in the Toronto campaign was not to give them toxoid. It is gratifying to report that the two and one-half years' experience shows us that this group did not contract diphtheria to any extent comparable to other children. From the standpoint of a general campaign carried on by a department of health, we consider that the reaction test is the only necessary test and we consider it to be efficient. By it the reactions to the immunizing doses can be foretold and practically all trouble in that respect eliminated.

We have noted that reactors seem to run in families and that it is always wise to perform the reaction test on children under six, if older children of the same family react. Our workers occasionally encountered a classroom where a high percentage of the children tended to react to dilute toxoid, while the balance of the classes in in the same school were just as definitely non-reactors. That is, they did not show more than the usual 10 per cent reactors. This strengthens our belief that probably certain groups of children who are closely associated together in a classroom may create a diphtheria environment through carriers or mild undiagnosed cases, and this is true of family groups as well. This environment does two things—it builds up an immunity to diphtheria, which will probably protect a large percentage, and it sensitizes to products of the diphtheria bacilli.

Reactions to Immunizing Doses

In the earlier part of the campaign before our physicians became so well acquainted with the dilute toxoid reaction test, and occasionally in the later stages, a few reactions were encountered following the immunizing doses of toxoid. These were mostly of a local character, consisting of redness, swelling, heat and pain around the site of inoculation, extending perhaps to the elbow and very occasionally beyond it. In some, general symptoms of fever, headache, malaise and nausea accompanied or occurred without the local reaction. To one unacquainted with the work, such reactions cause some anxiety but if their character is recognized and no treatment other than cold applications to the site is given, they disappear entirely in the course of a day or two. The general symptoms disappear in a day or two without any treatment other than rest. It must be emphasized that these reactions are not due to any toxic action, as toxoid is absolutely non-toxic, but they are due entirely to the specific protein sensitivity found, as a rule, only in the older children and adults. We are of the opinion that red-headed, freckled children react more noticeably than others. Injury

seems to increase the reaction. An example of this was a girl of eight years who fell on her way home from school, injuring the inoculated arm. The arm swelled rapidly, the elbow joint became fixed. The family doctor was called and, with the history of a fall and inability to move the elbow, he advised an X-ray, which, of course, was negative. The condition subsided in a few days with no impairment of movement. As stated before, these reactions can be avoided practically always by the use of the toxoid reaction test with judicious dosage following its use.

We had only five abscesses following approximately 100,000 inoculations. In each case there was a history of injury to the site following the inoculation. A streptococcus, slightly haemolytic, was isolated in one instance. These abscesses were, we think, merely coincidents and the occurrence of so few following so many injections indicates not only the sterility of the material used, but the good technique of the physicians and nurses. We received many urgent calls to visit children who were reported as "all out in a rash from the toxoid." We investigated all these rashes carefully and in every instance we could definitely diagnose one of the exanthemata.

Results

Results might be measured in two ways. First, the children might be tested after immunization with the regular Schick test. This, of course, would entail work and expenditure which we did not feel justified in making. The more crucial test is the occurrence or otherwise of diphtheria in the group supposedly immunized. Careful check, therefore, has been kept on all diphtheria cases occurring in Toronto. Each quarantine inspector's card has been checked against our immunization files and all notification cards are now being rechecked. As this with the subsequent analysis is still in progress, a definite estimate of the amount of diphtheria prevented by our campaign cannot be given. Preliminary figures, however, indicate that the immunization has been of a very high degree and that the work has had excellent results. The number of immunized children who have contracted diphtheria is apparently less than 10 per cent of that which would have been expected to contract the disease in the absence of the toxoid. To have accomplished this, without having produced as much as one grave reaction is, we think, an accomplishment worthy of note.

The results in the education given to others and the influence on the pre-school children are difficult to estimate. That it has had some effect is shown by the fact that quite an appreciable number of pre-school children have been brought to the schools and clinics with the request for immunization; from the commencement of the campaign a suitable time was set aside at each school for the immunization of this group. It is realized, of course, that if the department is to accept the responsibility for the control of diphtheria in the future, attention

must be directed primarily to this group which supplies about 50 per cent of the deaths, though only 25 per cent of the cases. I am permitted to state that this question is now under consideration by the Department.

Cost of Toxoid

By the travelling team system, we have found it possible to test and give three doses at an average cost of sixty cents (60c) per child (exclusive of the cost of toxoid). This also includes home visits by members of the team to check up on complaints or reactions. This compares favourably with campaigns for a similar purpose. Some municipalities pay local physicians one dollar per person for this service, but we are doubtful if accurate records could be procured by this system. The cost was largely one of salaries. Five nurses were paid at the rate of $1,450 each per annum. Physicians were paid by the half-day of two hours at the rate of $5.00 for the morning and $4.00 for the afternoon. The cost for materials was a minor expenditure when compared to salaries. Certain incidentals that could not be included in the cost consisted of advance work done by the regular school nurses, talks by the district medical officers and a certain amount of visiting done by the regular staff.

Conclusions

Through the organization outlined, a mobile unit responsible for all phases of the work and moving from school to school, the immunization of school children with three doses of toxoid has been found a very practical procedure.

The reaction test should be used previous to immunization as by its judicious use practically all reactions can be avoided.

The cost of 60 cents per pupil is, compared to other similar immunization campaigns, reasonable.

Immunization should be granted to the pre-school group. If the profession fails to accomplish this, the responsibility for it must then be accepted by the municipality.

Maternal Mortality*

HON. DR. E. W. MONTGOMERY

Minister of Health and Public Welfare, Manitoba

AN investigation of maternal mortality rates is demanded by an aroused public opinion. Every community in the province has a home where motherless children and a heart-broken husband appeal to "whatever gods there be" for some mitigation of their intolerable fate. It naturally, therefore, becomes at once the sacred privilege and plain duty of the whole medical brotherhood to give the problem the most earnest consideration, and to carry into action whatever measures of control are well stabilized and of proved value. This is not a problem for the individual practitioner alone, nor for a local medical society, nor for you, the provincial organization. It is a problem for all—for all medical agencies, be they public or private, official or voluntary in character.

I presume that I am safe in saying no public health nurse, no health officer, no health department would voluntarily take part in any activity of a controversial nature, especially where there is a possibility of an infringement of the prerogatives of the private physician, unless the powers and responsibilities conferred by law upon health officers and health departments make it their inescapable duty to take an active interest in such matters. I trust that this explanation will effectively set forth my reasons for selecting the subject—"Maternal Mortality" as the title of this paper. To make my position quite clear, it is assumed therefore that the subject of maternal mortality rates is as definitely a public health problem as are the mortality and morbidity rates of all other types of infectious disease

For the last three or four years, at least, the medical fraternity of this province has been keenly interested in the provincial maternal mortality rate; previous to 1925 every conscientious medical practitioner concentrated his attention on his own record,—he thought of the unfortunate cases of Mrs. Jones, who died of convulsions, Mrs. Brown who succumbed to sepsis, and Mrs. Smith who went out with postpartum haemorrhage, as his own peculiar problems, and he remembered, to regret, earlier and happier days when he had even more maternity practice and went sailing along without a single mishap. But, when you and I began to think in terms, not of our own patients or our own records, but in the terms of provincial or federal statistics, it soon became very evident that what appeared to be a streak of individual bad luck (when you or I lost a maternity case) was but the local

*Read before the Annual Meeting of the Manitoba Medical Association, Sept. 13, 1929.

manifestation of the tragic fate which overtakes well over the half of one per cent of all pregnant women in North America.

In 1928 there were 14,504 reported births in Manitoba. In consequence of this gain in population 70 mothers lost their lives in the performance of a normal physiological function.

Conditions Which Give Rise to Puerperal Infection

It is unnecessary to remind you that ever since the days of Pasteur and O. W. Holmes, the actual agent of infection in all forms of sepsis, including puerperal sepsis, is a bacterium.

Doctor Cadham informs me that in his experience the infecting bacterium is almost always a haemolytic streptococcus, and further that the vaginal canal always harbours numerous streptococci, but that the normal secretion of the mucus membrane is an efficient bactericidal agent, and that any streptococci after remaining in the genital canal for a few hours or a few days, at the longest, become non-pathogenic. To accept this latter statement places the responsibility for the infection on some agency which must have had contact within a period sufficiently short to allow the streptococcus to manifest its pathogenic character. In other words, if the lower genital passages are sealed against outside infection for a period of at most a week prior to and during delivery, that infection *cannot* occur, except in such cases where ulceration or pathological abrasions are present in the vagina or on the cervix, so that the actual cause of puerperal sepsis is not debatable, but rather the mode or channel by which the infective organism reaches the maternal canal. It has been proved by many hundreds of thousands of fatalities that the attending physician carries the lethal organism from one case to the next.

In Great Britain, in New Zealand, in Scandinavia, in Canada, and in our own province, death rates are invariably lower in groups where neither physician nor midwife was in attendance, death rates are invariably lower in the group attended by midwives or trained nurses alone. Statistics tend to show that the death rate is higher in cases which receive medical attention. This demands the urgent attention of the profession to investigate and eliminate the conditions which may give rise to this higher death rate. It must be remembered, however, that the difficult cases invariably fall into the hands of the general practitioner,—spontaneous delivery fails, a midwife or a trained obstetrical nurse fails, then our unfortunate brother automatically becomes the goat and gets all the glory for delivering a dead babe, and all the blame for the mother's death from puerperal sepsis!

But look for a moment at what happened in the city of Aberdeen where an investigation of the maternal mortality rate has been carried on for ten years. In a group of 2,200 maternity cases that were the entire responsibility of maternity hospitals, and therefore had, all the way through pregnancy and delivery, approved nursing and medical

care, the death rate was 14.9 per 1000. The rates in other groups were as follows:—

(*a*) Out-patients of approved institutions..... 5.6
(*b*) Patients of private doctors (not in hospitals)..... 6.9
(*c*) Midwives' cases..... 2.8
(*d*) Midwives' and doctors' cases..... 2.5

It is also pointed out that this group of 2,200 cases does *not* include emergency cases which have been treated by doctors and midwives elsewhere and have been transferred to hospitals on account of difficulties encountered. It is possible, perhaps probable, that a considerable number of this group were not of vigorous health, and in consequence were enrolled as hospital patients, but here is a group of 2,200 out of a total of over 36,000 births—almost 7%—a large enough group to flatten out accidental inequalities in the rate—a group that had the best of everything from a medical standpoint, and yet gave by all odds the worst results! Not only were the results bad in regard to puerperal sepsis but the death-rate in toxaemias of pregnancy was 2½ times as high in institutions and even the fatalities from haemorrhage were at least double in institutional cases. On the whole this analysis of the situation in Aberdeen is more than disquieting, especially since a consideration of our provincial records discloses an analogous state of affairs. For a period of seven years (1921-1927) the maternal death rate in the hospitals of Manitoba was 8.6. During the same seven-year period the death rate outside of hospitals was 2.65 It may be noted in passing that our mortality rates in hospitals in cities over 10,000 are not quite as high as in the smaller towns and villages. The highest rate recorded in non-hospitalized cases occurred in one of the most thickly populated and medically best served districts in the Province, while the lowest rates recorded were of a municipality and an unorganized district where the population is scant and there is neither a resident doctor nor a public health nurse.

It is characteristic of a good fighter to put in his best kicks when the battle goes against him. While there has been little gained in the control of puerperal sepsis in the last 40 years, there are certain proved vulnerable points in the enemy's line of defense and against which our efforts may be profitably directed. What these points are is shown very clearly in the Aberdeen enquiry.

First—The maternal death-rate is unusually high among mothers of illegitimate children (the sepsis rate is thrice that of the average maternal mortality rate). It then becomes the duty and privilege of the physician to do a little social welfare work as well as exercising his professional skill in the interest of the unmarried mother and her nameless child.

Second—The general health of the mother before and during pregnancy has been found to directly influence the mortality rate, the death

rates being just double in that group which comprised individuals who were designated as having "unsatisfactory" general health. To improve the record in the case of patients whose general health is unsatisfactory might mean instructions on the delicate subject of birth-control, it might mean early interference in pregnancy already established; in any event it would mean exhaustive and repeated examinations of the potential mother until the cause of unsatisfactory health is determined and dealt with. The writer is well aware of the fact that the expression "general health unsatisfactory" is a smoke screen behind which the physician is wont to hide his lack of knowledge, but as long as there is an honest attempt being made or kept in mind to ferret out the exact cause of the dyscrasia, in the great majority of cases a solution will be found long before the termination of pregnancy.

Third—The value of efficient ante-natal supervision is, I am sure, obvious from the personal experience of each one of us. Further, the Aberdeen enquiry has demonstrated that the death rate among those who attended ante-natal clinics was just 50% lower than it was in the group who had no ante-natal supervision. Surely a sign-post on the way to success! Since its inception the Winnipeg General Hospital Pre-natal Clinic has cared for approximately 2,150 cases, with only two maternal deaths—a rate of 0.93 per thousand live births. Another evidence of the paramount value of adequate pre-natal care.

Here is the one bright spot in a pretty gloomy outlook, and the immediate problem is how to make the best use of it. It is quite probable that if every pregnant woman in Manitoba received proper pre-natal care there would be 50 maternal deaths in place of 70—which must be expected—next year. How can this pre-natal supervision be made generally available? I am sure every general practitioner in the province is ready to give such supervision on request; the whole difficulty to be ironed out arises from the fact that neither the man nor the woman most interested has the proper appreciation of the hazardous situation in which they find themselves, and whether this ostrich-like indifference to the dangers ahead is due to blind faith in a beneficent deity, to gross ignorance of clamorous facts, or whether it is due to a biological apathy which may be called fatalism, does not matter much, —it must be overcome! Existing agencies which are competent to deal with the situation are:—*First*, the family physician, whose contacts with his patients and neighbours gives him many opportunities to advise and dwell upon the advantages of preventive treatment; *Second*, the public health nurse who supervises school health and has a means of knowing, or at least of hearing about almost every expectant mother in her district; *Third*, the local health officer whose main effort is to *prevent* disease, and who aims to control infections. Just here, the fact that puerperal sepsis is an infection naturally suggests that the health officer has a twofold interest in that disease; *First*, he should interest hmself in every measure which is calculated to prevent its development;

and *Second*, when a case has occurred it should be dealt with after the manner of any other infection, by well defined measures for treatment and control. *Fourth*, the municipal doctor, where such an official is employed, would seem to have a particularly advantageous situation to cope with.

Lastly, all social welfare and religious organizations, and the public press, should be enlisted in a campaign to foster universal pre-natal supervision. This means a free discussion of a subject, the mere mention of which has commonly been under the taboo of polite society. This means a radical change in behaviourism, and a breaking away from one of those deep-rooted harmful social prejudices somewhat in line with the old edict that a woman's skirt must reach at least to her ankles. Drag the subject of the care of the pregnant woman out into the light of day. Make all authentic information regarding diet, exercise, hygiene, medical and nursing care, at least as widespread and as interesting to the public as information which is now generally circulated regarding the feeding and care of children. A campaign for better babies must logically begin at, or before, pregnancy begins, and must recognize as a fact that a mother with satisfactory general health is the most important factor to be reckoned with.

A solution of the problem of maternal mortality involves, primarily, control of puerperal sepsis. Any improvement in the lethal records which has been effected in the last 40 years has been due to improvement in prenatal care, while the major question still stares us in the face clamouring for an answer. The ground which we have gained and held is not ours because we have concentrated exclusively on the minor and easier phases of the difficulty. The statistician, the laboratory man, the general practitioner, the clinical research worker, have all bent their efforts towards the same goal, *viz.*, to determine the method of infection and its source.

While as yet a definite answer to this question cannot be stated in axiomatic terms, yet from all authentic sources the same opinion seems to be in process of crystallization, and that is, that genuine instances of autogenous infection are very rare, and that either the physician, the midwife, or the nurse, is a carrier of the infecting organism. As the midwife is, in numbers, scarcely a factor to be reckoned with in Manitoba, the responsibility is put squarely to our profession. Since it is the proper procedure in obstetrical practice to have at least an oversight of all maternity cases and to interfere where, in the judgment of the obstetrician, such interference gives comfort to the patient, or reduces the risks of childbirth, every physician who takes this responsibility must realize its enormity. When a patient is dying of a pathological process, acute or chronic, the attending physician interferes with some risk, but if he cures, the gain is all to the good. In an obstetrical case the patient is going through a physiological crisis where interference enormously increases the risk; therefore, such interference is

only justified where the process of childbirth becomes pathological, and the risks attending interference are, in the judgment of the attendant, less than the risk involved in waiting for spontaneous delivery.

After due consideration of all measures that might be of use in improving pre-natal health, one invariably comes back to the great problem in the control of maternal mortality, namely, the lowering of the death rate from puerperal sepsis, for that is indeed the outstanding condition that must be faced, and that is the problem that is essentially the responsibility of the medical practitioner. Good housing arrangements, trained nursing service, the best ante-natal care, supervision of general health, even prior to pregnancy, are all helpful in a way, but all of these improvements in midwifery practice have not made very much difference in the septic death rate; in fact, there has been little or no improvement in that direction in the last thirty to forty years. Probably whatever improvement has taken place in the total death rate from the measures which have been applied during that time,—namely, improved housing conditions, hospitalization, pre-natal care, etc., has been more than offset by the increase in the septic death rate in that stated period. Even in the best managed hospitals slight epidemics of puerperal infection still occur. Local applications of this statement can be made were it advisable to do so. It is a singular fact that before the days of Oliver Wendell Holmes, sometimes for a period of several years in certain institutions there were no cases of puerperal sepsis recorded. Then, without any apparent rhyme or reason, the dread disease became rampant, something like the incidence of any acute infectious disease in the general population.

In the article so often referred to regarding the inquiry as to the maternal mortality rate in Aberdeen, it has been pointed out that the *septic rate* is apparently increased by hospitalization and by management under the best approved obstetrical technique. This same unfortunate condition is in evidence in every quarter, particularly so in Scandinavian countries and in New Zealand, where the total rate is unusually low, so that the responsibility for the increased septic rate is brought squarely home to hospitals and to the medical profession. Theirs is the burden, and from them must be sought the explanation and suggestions of cure. Better obstetrical teaching might be considered as the first and most important move in the right direction.

A deeper sense of responsibility, or, if you wish, a keener appreciation of the risks in obstetrical practice, can only be acquired by a more thorough mastery of the subject. An education in the science and art of obstetrics involves a thorough knowledge of the principles of both medical and surgical practice, as well as an inherent capacity for making haste slowly, for masterful inactivity, for an analysis of situations which are at once medical, psychical, and personal. It is more than evident, therefore, that a training in midwifery can scarcely be obtained in the brief time allotted to that subject in the curriculum

of most medical colleges. Manitoba University has acknowledged the need of more and better training in obstetrics for her graduates by increasing the number of teaching hours from 119 in 1919 to 160 in 1929, and by requiring for the years 1928 and 1929, attendance upon 25 cases instead of 10. Practically all Grade "A" colleges are modifying their curricula to provide for more didactic teaching and better clinical opportunities in obstetrics for their undergraduates. In the colleges is where the really effective work must be done; every graduate should go out into obstetrical work with his attention centred upon a solution of the three main problems of midwifery practice, *viz.*: (*a*) Control of puerperal infection, (*b*) The etiological factors in the toxaemias of pregnancy, (*c*) The causes of haemorrhage.

Increasing the number of lectures, of demonstrations and cases for observation, are steps in the right direction but what really counts in obstetrical education as much as it does in any type of education is the inspiration, the ideal, the groundsills on which the teaching structure rests. In college days one heard a lot about ideal therapy, a remedy should be swift in action, pleasant to administer, and safe in its results. In maternity work the ideal should be *safety* first and before all else.

The argument is frequently advanced from many different authorities that the maternal death rate can be lowered by establishing more efficient maternity service in outlying districts where there is no type of municipal organization or no medical services available. In a recent paper published by the Maternity Centre Association of New York, the statement is made that there are wide stretches of country without doctors. Nineteen hundred counties in the United States are without a public health nurse, and in these counties at any time there are over 2,000,000 pregnant mothers distributed throughout this vast area without any available maternity service. The logical inference is that the maternal death rate is higher in this poorly cared-for area than it is over the rest of the country.

In a paper which appeared in the *Canadian Medical Association Journal* in June of this year, Doctor McCullough, who for many years was Chief Health Officer for the Province of Ontario, states that there are wide areas of Canada where the distance from medical aid prevents anything like an adequate medical service. This is serious, particularly in regard to the care of the mother in childbirth, and no doubt contributes largely to the high maternal mortality rate.

The intention of this paper is to show, if possible, that the improvement in maternal mortality rates depends particularly on improvement in obstetrical methods, and while all other measures intended for the relief of the accidents of pregnancy and childbirth and to prevent what are known as the toxaemias of pregnancy, are to be heartily endorsed and assisted in every possible way, still, after all, the main contention is that improvement in obstetrical methods to control puerperal sepsis appears to be the procedure most urgent and most promising.

The Control of Rabies*

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IT is a remarkable fact, that while rabies is one of the most ancient and horrible diseases affecting man and animals, and although there has been an extensive accumulation of knowledge concerning it, there is still much ignorance, superstition and misunderstanding with regard to it.

The contagious nature of this disease was known centuries ago at a time when the populace of some of the countries of Europe was panic-stricken, owing to its prevalence and its terrible manifestations.

While the causative factor of disease was a mystery to the people of that age, they realized that fevers were "catching", that epidemics and epizootics spread, and they readily associated hydrophobia in man with the bites of rabid dogs. It was a common belief, however, that rabies in dogs could develop spontaneously as a result of excessive hot weather, a concentrated meat diet, or an insufficient quantity of drinking water, and even to-day there are those who still argue this possibility.

Nearly fifty years ago Pasteur, undoubtedly prompted by the potential suffering of the public, directed his attention to the study of this disease. He first demonstrated that the virus had a special affinity for nerve tissue, and that its purest and most concentrated form was to be found in the central nervous system. He later established a method for the attenuation of the virus, which resulted in his discovery of a protective vaccination aganist this malady, and which has since been employed in the treatment of man, with much success, in all civilized countries.

Many other research workers have given this disease special study, and while the causative organism has not yet been identified, it is now generally accepted that it belongs to the class of ultramicroscopic organisms, known as the filtrable viruses. It has further been demonstrated that the virus multiplies only in the living tissues, and all attempts at artificial cultivation have failed.

Negri Bodies and Rabies

Some confusion followed the finding, by Negri, of Italy, over twenty years ago, of small round or oval-shaped bodies in the ganglion cells of dogs dying from this disease. In more recent years it has been estab-

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lished that Negri bodies are associated with rabies, but whether they are the true cause of the disease, or a result of the infection, has not been definitely determined, although some research workers believe they are of a protozoan nature. The finding of Negri bodies by the aid of the microscope has for some time been recognized as positive evidence of the presence of the disease, and has in a large measure replaced the older and much slower method of animal inoculation. The demonstration of Negri bodies has elicited the information that in the case of furious rabies, with its manifestations of great excitability, they are found in abundance, while they are often scarce or absent in specimens obtained from the so-called dumb form of this disease.

It has been shown that the path travelled by the virus in the body has an important bearing on the formation of Negri bodies, as has also the virulence of the virus, that of high virulence killing before Negri bodies have had time to develop in the cells of the structures in which we find them on microscopic examination. It is generally agreed that once the virus is absorbed by the nerve endings in a wound, it follows the course of the nerves to the nerve centres, the spinal ganglia, spinal cord, medulla, and anterior brain, and that the path travelled by the virus determines the presence, the absence, and the number of Negri bodies.

THE PERIOD OF INCUBATION

There is reason to believe that the period of incubation is influenced, aside altogether from the virulence of the virus, the degree of resistance of the body cells and the nature of the wounds, by the distance of the locality of the bite, or the point of infection, from the central nervous system, and also by the age of the animal. The disease undoubtedly develops more quickly in the young than in the old, and symptoms are manifested much earlier following bites on the lips, muzzle, face and head of animals than elsewhere. As a rule the first symptoms appear in the dog from two to eight weeks after the bite, sometimes they occur as early as the beginning of the second week, or again only after several months, and rare authentic cases have been recorded after the lapse of a year.

THE PICTURE OF RABIES IN THE ANIMAL

The clinical picture of rabies is on the whole the same in the various species of animals, and the only variations observed are probably due to the fact that the symptoms are more or less subject to modifications in accordance with the individual temperament, and the physical development of the animal.

The general symptoms are sufficiently characteristic to impress their peculiarities upon the mind of the observer and are more easily recognized than described.

In all species, however, a marked change in the demeanour of the animal is first noticed by the careful observer. This may be increased excitability, restlessness, viciousness or dullness.

As the disease progresses the symptoms differ in accordance with the location of the bite, the distribution of the virus, and the rapidity with which the normal structures become affected and, consequently, vary from a violent uncontrollable state to one of marked dullness, followed rapidly by partial or complete paralysis and death. The former has been termed "furious rabies" and the latter "dumb rabies."

Furious Rabies

A dog affected with the furious form is morose, sullen, and restless, and becomes excitable and nervous. If not detained, he trots along with a careless gait, roaming around, paying no attention to anything that he gathers from the sense of smell. He carries his head erect with a typical business-like rabies trot. He presents an uncanny and unnatural appearance with saliva dripping from, or frothing about the mouth; this, if once observed, is seldom forgotten. He exhibits a strong tendency to roam and may trot continuously across country until he becomes exhausted and dies. He is not, as a rule, inclined to attack motionless objects, but anything moving about him appears to excite him to fury, and he will viciously attack human beings and animals unfortunate enough to be in his reach.

Dumb Rabies

The onset of the symptoms in the dumb form is misleading; the affected dog seeks cover and remains hidden as much as possible. He exhibits a tendency to vomit, retches with muzzle poked out, the lower jaw drops, he is unable to swallow, saliva flows abundantly, and the breathing is laboured and accompanied by a slight snoring sound. There are as a rule no paroxysms of rage, but he will attempt to bite viciously at any object thrust at him. Rapid emaciation sets in, followed by complete paralysis, coma and death.

The facial expression in all animals affected with either form of rabies is characteristic. There is a peculiar watchful and disturbed expression with an outward position of the eyes, with dilated pupils.

Fortunately, rabid animals do not as a rule live longer than a week after symptoms develop, and most of them die within a few days. A rabid dog leaving home rarely returns, and as the infection is disseminated by his bite, he may, and generally does, leave behind him many new unknown centres of infection.

There is no record that a dog may be a true carrier of this disease, and it is very doubtful if he could transmit the malady and not develop definite symptoms.

It has been demonstrated that the saliva may contain the virus

from two to eight days before symptoms appear, and that its inoculation into the tissues is the principal source of its dissemination.

The disease does not always develop after a bite from a rabid animal, as much depends upon the amount of virus entering the tissues. If the skin is protected by clothing, or a thick covering of wool, or hair, the bite may not introduce the virus.

WHAT TO DO WITH THE SUSPECTED DOG

A suspected dog should not be killed if it is at all possible to avoid doing so. He should be trapped in an enclosure and safely detained pending the arrival of a veterinary inspector, who will be sent promptly to investigate directly notification is received. The inspector will not order the slaughter of the dog if he can be safely detained, but will place him under quarantine and arrange for whatever additional measures he considers necessary to prevent the dog's escape. If the dog is rabid, death will intervene in a few days, and the head can then be removed, packed in ice and forwarded by express for laboratory examination.

There is a much greater likelihood of finding Negri bodies in the brain tissue of an infected animal if obtained after the disease has run its course and terminated fatally, than if the course of the disease is interrupted by slaughter. As the absence of Negri bodies is not positive evidence that the infection does not exist, failure to detect them necessitates resorting to animal inoculation, which further delays the reaching of a definite decision for at least ten to fourteen days. A prompt diagnosis is particularly desirable when human beings have been bitten, as they naturally experience much worry and anxiety.

It cannot be stated too emphatically that the bite of a dog, or any other animal, will not under any circumstances transmit rabies unless that animal is, at the time of biting, affected with the disease. It is, therefore, most important, in cases of biting of a suspicious nature, to securely detain the animal that inflicts the bite, and no danger need be apprehended if symptoms do not develop in the course of a few days. If, as is too frequently done in such cases, the animal is destroyed at once, there is much doubt and delay in obtaining proof as to whether it was rabid or not.

This is important, as the mere fact of having been bitten by an animal, even though there is no reasonable ground for suspicion, may, in view of the imaginary theories which have passed down from generation to generation, produce in the mind of the wounded individual a continued disquietude from the oft recurring thought that the dog may have been rabid, and this painful and haunting uncertainty acting upon a highly nervous temperament may lead to more serious results.

The transmission of this disease is not limited entirely to the bite of a rabid animal, as the virus may gain entrance to the tissues through

abrasions of the skin even though a bite has not been inflicted. The virus has been demonstrated in the milk of affected cows, but whether the milk contains the virus before symptoms of the disease appear, as is the case with the saliva of dogs, is not known. In any event, it would not be wise to permit the consumption of milk from suspected cows. The chief form of exposure, however, that needs to be seriously considered in this disease, is the bite of a rabid animal. Dogs which have been in contact with a rabid one, but have not been bitten by it. have not actually been exposed.

It is, unfortunately, seldom possible to identify all dogs which may have been bitten, and it is consequently necessary to regard all dogs in the vicinity of an outbreak as having been exposed and to deal with them accordingly. The chief problem in the control of this disease is the disposition of these dogs, bitten or otherwise, and while their destruction is the ideal procedure, it is seldom justified from a live-stock economic standpoint.

THE USE OF MUZZLES

The dog is, nevertheless, the primary factor in the propagation and dissemination of rabies, and any measures which will prevent him from inflicting wounds will undoubtedly result in the control and eradication of this infection.

Dogs can be prevented from biting by the use of properly constructed wire muzzles, and if they are made in the form of a cage to envelop the muzzle, face and head, and are securely buckled to a good fitting comfortable collar, they permit free movement of the jaws and cause little if any inconvenience. Muzzling orders are, however, very unpopular, and it is seldom possible to obtain the very necessary co-operation of the dog owners in their enforcement. It has, therefore, been found expedient at times to enforce orders requiring the detention of all dogs in infected districts, and to destroy any dogs not so detained. The effectiveness of this procedure has been established, but the welfare of the dog is sacrificed to such a degree that strong opposition is encountered.

THE IMPORTANCE OF STRAY DOGS IN THE SPREAD OF RABIES

The large number of ownerless and homeless dogs which accumulate, especially in cities and smaller towns, is responsible to a large extent for the dissemination of rabies, and for failure in promptly suppressing outbreaks. Untagged dogs, regarding which there is no record on the assessor's sheets, become a real menace when an outbreak of rabies occurs. The first evidence of this disease in a district is not infrequently traced to useless mongrels without license or tag, and whose owners cannot be determined. No one knows where these dogs come from, and dog owners as a rule disclaim any possibility of contact

between their own dogs and these mongrels. Time, however, discloses the facts, as it is not long before other cases develop, and it is then often possible to trace by their location the routes travelled by these stray dogs, which may cover many miles.

Licensing and Tagging Necessary

The strict enforcement at all times of local ordinances by municipal authorities requiring tagging and licensing of all dogs would do much toward eliminating the ownerless dogs, and the proper restraint of all dogs in public places by a leash would overcome to a great extent the danger of infection to human beings. We cannot hope to control rabies unless we effectively control the dog, and even in the absence of this infection, dogs should not be permitted to roam around without reasonable restriction, and in our urban centres they should be kept on leash. There is little to be said against the well-bred dog, or even the dog of common origin, provided he is properly broken, handled and kept under control, but the practice of allowing dogs to run at large indiscriminately and unattended, especially at night, cannot be too strongly condemned. When given unrestricted freedom, dogs constitute a real nusiance and they often become vicious and attack small children.

THE MUNICIPAL AUTHORITY

It is for these reasons municipalities have been given legal authority to pass laws for the control of dogs within their respective territories, but many of them do not take advantage of this provision, until a mad dog scare appears on the scene, while others pass by-laws and then forget all about them. While the strict enforcement at all times of suitable dog laws, by local authorities, is very necessary, both for human safety and the welfare of healthy dogs, it is of further great advantage in that it retards the spread of infection at any time it may be introduced. When rabies is prevalent, it undoubtedly constitutes one of the most serious problems confronting health officers, and while the number of deaths is not appalling, owing to the efficacy of the Pasteur treatment, the suffering and fear caused by it are so great that they make this the most dreaded of all diseases. The proper and prompt disposal of homeless and wandering dogs, and the strict control of the movement of others is of sufficient importance from a public health standpoint to warrant the serious attention of health officers.

I have no hesitation in stating that if municipalities could be persuaded to maintain an effective control of all dogs in their respective districts, rabies could not at any time assume epizootic proportions in this country. Under such circumstances the prompt application of federal measures would quickly control any outbreaks which might occur, and the eradication of the infection would be a much more simple procedure than under the conditions which now obtain.

THE INCREASE IN RABIES

Experience has shown that rabies is a preventable disease, and that when it does occur it can be eradicated. It has always had a very unique interest, in that it so completely differs from all other known diseases. We know more about it than we do about many other diseases, and we know exactly how to exterminate it.

In spite, however, of our rather extensive accumulation of knowledge concerning it, and although we have had at our disposal for a long period various biological agents for its prevention, and sanitary regulations and ordinances for its control, the incidence of this malady in the majority of civilized countries has been increasing during the past few years. A few countries, and Great Britain is a notable example, have by the strict control of the movement of dogs and muzzling orders eradicated this infection. Rabies is, however, more widely spread on the continent of Europe to-day than it was before the war, and while muzzling orders are in effect in almost every country, and vaccination of dogs is generally practised, the disease is not being checked because one of the most important factors, the stray dog, has not been eliminated. In the republic south of us, the incidence of this disease is greater to-day than at any previous period, although restrictive measures are being imposed, and much attention has for a number of years been given to the vaccination of dogs.

While much excellent work has been accomplished in the suitable attenuation of the virus with a view to simplifying the immunization of animals, more particularly that of Umeno and Doi, of Japan, we cannot hope to eradicate infection by vaccination. Immunization is undoubtedly of value as an accessory measure, but only as such, as the only way to get rid of this disease is to adequately prevent dogs from biting.

The International Conference on Rabies, which was held a little over two years ago at Paris, discussed this disease from various angles. Experts in live stock sanitation from many countries in which the control of this disease has been a very serious problem for generations attended this conference. Several resolutions were adopted, one of which was to the effect that rabies could only be exterminated by the restriction of the liberty of the dog, unless properly muzzled or confined to the premises of its owner, and the destruction of the stray and ownerless dog.

It is consequently generally accepted, that rabies infection can be eradicated by the proper control of the canine race, and its prevalence in any country is largely due to neglect on the part of local authorities to take full advantage of the powers conferred upon them.

Local authorities can maintain the necessary control of dogs by strictly enforcing by-laws providing for a suitably high obligatory licence tax, with a system of tagging by which a dog can be recognized

on sight as being in good standing before the law. All dogs not so tagged should be considered as having no owner and should be suitably disposed of. Licensing is important. The owner who is interested enough to pay the licence fee is likely to take care of his dog and keep him under control.

The control of epizootic diseases is a national problem, and it is an essentially economic service for the conservation of animal values. The Animal Contagious Diseases Act, which is a federal measure, provides the necessary authority for the Governor-in-Council and the responsible minister, to pass regulations and orders for the slaughter of animals, the imposition of quarantines, and other restrictions for the control of diseases which have a tendency to menace the live stock interests of this country.

HISTORY OF RABIES IN CANADA

Regulations for the control of rabies were passed twenty-four years ago, at a time when a few suspected cases of the disease were investigated but could not be confirmed. It was not until two years later, or in 1907, that rabies was officially confirmed in the Dominion. During that year a few limited outbreaks occurred in Manitoba and Saskatchewan. There were fortunately comparatively few dogs in the districts and it was possible to quickly suppress the outbreaks by the slaughter of contact dogs and the muzzling of others.

The situation was entirely different, however, when an outbreak occurred in the same year in the Province of Ontario, in a territory overrun with dogs, and in which numberless strays were roaming around. The outbreak started in the Niagara district, and although prompt measures were taken to suppress it, the number of outbreaks not only increased, but they gradually extended over the peninsula, and created an alarming situation. Many people were bitten by rabid dogs and large numbers of horses, cattle, sheep and swine contracted the disease. It was necessary, in order to prevent the spread of the malady, to prohibit the movement of dogs out of the infected area. In spite, however, of the fullest co-operation on the part of the provincial and municipal authorities in the enforcement of muzzling orders, and other restrictive measures, a period of five years elapsed before the disease was brought under control, and it took another five years to eradicate the infection. Two small outbreaks, one in Manitoba and the other in Alberta, were traced to dogs shipped from this area, but in the absence of many roaming dogs the outbreaks were promptly controlled and the infection quickly eradicated.

The Dominion was then free from rabies from 1917 until the fall of 1925. The disease was, however, again confirmed in January, 1926, in a number of sheep in the Low district in Quebec. Investigation disclosed the fact that during the hunting season in November, a few

stray hounds had been seen in the district fighting with local dogs and then disappeared. Some of the bitten dogs died a few weeks later after showing nervous symptoms and quarrelsome tendencies, while others left the district and did not return. As rabies was unknown in that territory, the disease was not suspected, and was, therefore, not reported. In the circumstances the conditions were most favourable for the dissemination of the infection, and additional outbreaks soon occurred in many districts in the Gatineau and Ottawa valleys. While many dogs were destroyed, and muzzling and detention orders were enforced, outbreaks continued to occur in unsuspected districts, and the disease eventually appeared in the cities of Hull, Ottawa, and Montreal, and spread into adjoining and other rural municipalities. The greatest difficulty was experienced in controlling the disease in the latter city, many people were bitten, and the situation developed into a serious public health problem, which could have been avoided if the municipal authorities had maintained proper control over the dogs in this city. It was not until officers were specially detailed, with suitable equipment, by the Federal Government to catch the dogs running on the streets, and to remove them to a suitable place for slaughter, that an improvement in the situation occurred. Although a muzzling order had been in effect for nearly two years, and due warning was given that all dogs found at large after a specific date would be destroyed, over 2,500 dogs were caught running about the streets of this city in the course of a few months and were destroyed. Many of these dogs were strays, the majority of them having no collars and those with collars had no tags. It is not in the circumstances at all surprising that a serious situation developed. It would, in fact, have been phenomenal if it had been otherwise.

There is every reason to believe that the infection has now been eradicated in this city, as well as on this Island, but occasional outbreaks are still occurring in other parts of this province and in Ontario. They are, however, being quickly suppressed by the imposition of individual federal quarantines and the enforcement of by-laws, restricting the movement of dogs, by the municipalities concerned.

I would particularly point out that, as it is impracticable to locate all dogs bitten by rabid ones, outbreaks may occur in unsuspected districts for indefinite periods before the infection is finally eradicated, and that the strict enforcement of by-laws by municipalities for the proper control of dogs, and the elimination of the stray wandering dog, are of paramount importance in the control and eradication of this disease.

The difficulty in enforcing dog laws is that the punishment must usually be visited on the wrong party, the dog, instead of the human being who ought to be responsible for him.

The dog has been man's companion for countless ages and he should at all times be properly protected by law.

Health Teaching in Normal Schools*

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IN advance of any serious discussion regarding health teaching in normal-training schools, it would seem wise to establish the validity of certain premises, the correctness of which have to date been more or less generally assumed. The first of these is that all school teachers have a well defined interest in the health of the pupils under their charge; second, that health teaching should be part of the school programme, and third, that the teacher should assume the major responsibility for such teaching. In view of the limited time at my disposal, however, I am going to presume that there is a general acceptance of these premises. Such being the case, then, it is highly desirable that some serious consideration be given to the question of preparing the teacher for these responsibilities. In view of the fact that practically all of the students present themselves at normal school with a very limited amount of health knowledge, this preparation must apparently be obtained at the teacher training school. This lack of a satisfactory health background further complicates the problem, as the time available for instruction in this subject is of necessity limited. This limitation of time naturally makes it difficult to impress the student with the importance of this particular educational field.

How best this limited time shall be spent is the question apparently of greatest importance. The type of instruction to be given to the prospective teacher hinges largely on the type of instruction that she in turn is expected to give to the pupil. It is presumably true that the theoretical presentation of the subject of hygiene will in no way influence the present or future health of the child concerned unless there is a sustained effort on the part of the teacher to interpret this information into terms that will have a direct relationship with the daily activities of the child. While a background of physiology, anatomy and pathology may be highly desirable for the teacher, it would seem that the most important end result for the child is not, for example, a knowledge of the process of digestion, but that certain articles of food are essential to satisfactory physical growth and mental progress, and that certain others are deleterious to such growth and progress.

Is it possible, in view of the present limitation of time, etc., to add to the theoretical knowledge of the teacher, and at the same time impress her with the importance of the subject in terms of actual health practice? My experience as Chief School Medical Officer in this

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province for the last ten years, tends to make me sceptical. One or two examples of this apparent lack of correlation may serve to illustrate my point. I recall a school principal in one of the smaller centres who insisted on serving tea and coffee at the cafeteria in preference to milk, on the ground that it was more economical, despite the fact that the teaching staff and the school health staff were daily emphasizing the desirability of milk as an essential part of the diet of growing children. Again, I noted on one occasion, an admirable presentation of the value of fresh air in a classroom in which the thermometer stood at 76 degrees Fahrenheit and the windows were, to all intents and purposes, hermetically sealed. These cases might be considered by some as atypical, perhaps they are, but innumerable other examples might be brought forward to show the same apparent failure to interpret the essential relationship between the practical and the academic.

The consideration of child health as it applies to the school age group, has been more or less arbitrarily divided into four major activities, namely, the control of communicable disease; the detection and correction of physical defects; the supervision of school hygiene; and the dissemination of useful health information, in such a way as to influence for good the physical status of the children affected. In what way is the teacher related to this programme? Dealing with each of these activities more specifically, I would say that it is not possible to initiate or maintain any scheme for the satisfactory control of contagious disease in the rural portions of any province, without definitely including in such plan the public and secondary school teacher. The question of communicable disease and its control is so intimately associated with school attendance and academic progress, that no matter how unwilling the teacher may be to assume an interest in it, it is not possible for him or her to do otherwise. This being so, then, any worth while contribution the teacher may make presupposes at least a limited knowledge of the symptomatology, suggested preventive measures and legislation for the control of such diseases. This knowledge must be obtained prior to his or her acceptance of a teaching post.

The relationship between intellectual progress and such prevalent physical defects as faulty vision, malnutrition, unsatisfactory hearing, abnormalities of the nose and throat and the all too many other conditions of this type found among the school age group, is patent to any individual who gives this matter even the minimum of serious thought. From 25 to 65 per cent of all children entering school are handicapped by one or more of the above mentioned physical defects. In order that the teacher may intelligently treat these children pedagogically, it is essential that she know something of their physical shortcomings and the possible effect of these on their school progress. This background of knowledge must likewise be gained prior to her actual entry into the field of teaching.

The third mentioned health interest, namely, school sanitation, is of greater importance than many of those associated with educational affairs apparently realize. While certain of the features associated with satisfactory school hygiene are, on careful analysis, important chiefly from the standpoint of the æsthetic, there are others which have a direct and definite bearing on the health of the children in attendance; for example, school lighting, seating, heating and ventilation and the supplying of sufficient sanitary conveniences and an adequate supply of pure drinking water, are all health factors, and they are as essential in a one-room rural school as they are in a metropolitan area, and it behooves the teacher to know all that it is possible for her to know regarding this phase of the subject. That the teacher, in many cases, is not sufficiently well versed in a knowledge of school hygiene is fairly well shown by the apparent lack of interest in the undesirable conditions which are permitted to exist.

The fourth specified health activity associated with a school health programme is health teaching, and while the school health staff should lend some measure of direction to the classroom presentation of the subject under certain circumstances, and supplement the teacher's instruction, the responsibility for this instruction must be assumed by the teacher. Her teacher-training, her daily contact with the pupils, the opportunities for correlating hygiene with English, history, science, etc., and the respect that her position in the class entails, all are influential factors in placing this responsibility. If we could have added to the reasons already given, "her intimate knowledge of the subject," our problem would have been well on the way to solution.

The establishment in the teacher-training school of a well-rounded-out system of school health service, modified to meet the conditions existent, has been found to be the best method of stimulating the pupil teacher to take a larger measure of actual interest in the question of personal health. Not only is the health of the student improved, but the value of such a service is demonstrated in a way which carries with it the conviction of practicability. In fact, I have no hesitancy in stating that, in my opinion, a health-teaching programme in a normal-training school, that does not contain definite provision for continuous medical inspection during the entire course of training, can only be indifferently successful.

The essentials to satisfactory health teaching in normal-training schools are, then, a well arranged school health service, the personnel of which has been carefully chosen; a knowledge of the fundamentals of school hygiene, communicable disease and its prevention; the prevalence and importance of physical defects among children, and the necessity for applicable health instruction leading toward the establishment of desirable health practices. Whether or not the present plan of dealing with this subject in the normal-training schools accom-

plishes these objectives is for those charged with the responsibility for the conduct of such schools to say.

In the provinces of Nova Scotia, British Columbia, Alberta and Saskatchewan, a programme of health teaching has been established, which includes medical examination of all students, follow-up work *re* the correction of defects found, a plan of continuous health supervision of students, and a curriculum which allocates to this subject between 60 and 70 teaching hours. In each instance, a nurse with teaching experience, and special academic qualifications, is attached to the staff as director of health teaching. Evidence that this practice is of sufficient value to warrant its wider adoption is forthcoming in the reports received from those centres in which it has been in operation.

The choice of a director for this branch of the curriculum is of the highest importance. In the first place, it is essential that the person chosen should be enthusiastic about the part he is to play in the programme. By enthusiasm, I do not mean that restricted point of view which permits of their seeing everything in terms only of physical health, but a firm conviction that the prevention of disease and the development of an above-average state of physical fitness are of sufficient importance to warrant their serious consideration by all. The second requisite for a satisfactory teacher in health is a good background of scientific knowledge, and the ability to select from this knowledge the subject matter that would have some definite relationship to the problems likely to confront the student when he or she becomes a teacher.

In a recently published article, Dr. Jesse Williams of Columbia University (although he is a physician himself) contended that a physician is seldom the best person for this work, because he knows too much about the subject, and is likely to develop it far beyond its usefulness. I am inclined to think that many of the staff in the schools of Ontario will be inclined to agree with Dr. Williams, as the result of a course of lectures given just recently by myself.

The subjects included in the course of lectures given by the Director of Health Teaching in the normal schools in the provinces of Nova Scotia, Alberta and Saskatchewan, are:

2 lectures on the health of the teacher.
4 " on health examination by the teacher.
4 " on the hygiene of instruction.
10 " on health instruction.
2 " on physical activities.
4 " on school hygiene.
8 " on communicable disease.
12 " on first-aid.
8 " on nutrition.

While the necessity for such a comprehensive presentation of health material may be difficult of realization by some of those associated with teacher training, there is an apparent unanimity of opinion among many familiar with such a programme, that the allotment of the time required for this purpose is warranted in terms of the results attainable.

In conclusion, I am tempted to quote Sir George Newman, the world's present most noted public health authority, who says:—"The mere increase of knowledge and particularly the knowledge of preventive medicine or the ways and means of personal hygiene and well-being can do nothing of itself to prevent disease and to safeguard health, unless it is understood, accepted and practised." While we may resent the placing of this responsibility upon the already over-burdened teacher, the fact remains that the school is the only agency existing at the moment which is able to influence the adoption of desirable health practices. If the health of the next generation is to be materially better than that of our own, it depends largely on whether or not the teachers in the primary and secondary schools become enthusiastic exponents of good health.

The establishment of the Blackader Lecture on Diseases of Children, by the Canadian Medical Association, on the retirement of Dr. Blackader from the editorship of the Canadian Medical Association Journal, is a fine tribute in which the whole medical profession throughout Canada will be delighted to join. No man holds more of the affection and respect of the profession, and no man merits more.

The Problem of Securing Recruits for the Public Health Nursing Field*

ELIZABETH L. SMELLIE

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NOT sufficient nurses are entering, or equipping themselves to enter, the public health nursing field. That this state of affairs is not peculiar to Canada is evident from the communications of Dr. May Burgess', Director of the Committee on Grading of Nursing Schools in the United States. She states that of nurses who have been graduated less than a year about 7 per cent hold public health positions, 24 per cent hold institutional positions and all the other 69 per cent are in the free-lance field of private duty. This furnishes a key to many a problem but does not automatically unlock the door. Someone has to use it. The Grading Committee says: "Here are the facts. What do they really mean?"

Using this as a text, then, because, after all, conditions are apt to be fairly similar in the United States and Canada, it seems quite worth while to consider the problem as it has reference to our own country, and while we cannot expect to arrive at a solution of all our difficulties in one afternoon, it may help if we compare notes and devote some time to the various factors entering into the situation. For instance, it would be fallacy to conclude from this that all the recent graduates in their early youth proceed at once to take up private duty work because of its exceptional appeal, and that later as they reach middle age they become correspondingly enthused about public health work.

Possibly there *is* a great scarcity of graduate nurses in Canada, possibly only at certain seasons, or else the supply available is not well distributed. How much effort is made to guide them as to the selection of the type of work they will undertake, and how much follow-up later of the recent graduate? We have not sufficient reliable data available on any of these points to arrive at a positive decision. Nevertheless, one has liberty to draw certain conclusions from observation and discussion.

From the recent graduate one frequently learns she has been dependent on those at home over a long period, even under certain circumstances been compelled to borrow money in order to complete her training, which, in many cases, immediately succeeds completion of her schooling. Nursing is the work she is keen about, and is qualified to do. The average graduate looks forward eagerly to the time when

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she can be independent and in a position to earn her own living. Private duty, particularly "specialing" in the hospital, appears to be the quickest method to accomplish this and to achieve financial independence. It also demands little re-adjustment. Neither is a nurse at this stage apt to look too far ahead nor to consider private duty as her life's work; there are comparatively few institutional positions available. As a senior nurse she has had daily contact with the private nursing group, knows a good deal about their work, so that taking the line of least resistance she drifts into private-duty work. Institutional work, too, she knows, but in comparatively few schools has she had contact or practical experience with a public health nursing organization during her training, nor has she much first-hand information as to their function or relationship to other health agencies. Having been one of a group for so long, the recent graduate may not admit it but she is somewhat fearful too of going "off on her own" or of being isolated from her fellow nurses. Throughout her training she has not been encouraged much to use initiative and she is not of the adventurous type. In many cases lack of education prevents her considering taking special training or doing work other than private duty. Seldom does one infer there is lack of interest with regard to public health work, but very much more frequently a limited knowledge of its aims, requirements and opportunities for service and development.

The training school equips the nurse to carry on nursing as a career, not to be a specialist in public health nursing or in social service. The ideal superintendent and her assistants have a keen sense of community responsibility, and realize the importance of directing the thoughts of their senior nurses-in-training towards the various branches of nursing about to be open to them, and in which they are likely to obtain employment and to be successful. They know that at certain times of the year a great many private-duty nurses are unemployed, whereas there is practically a certainty of employment for a nurse once she is qualified to do public health nursing. Unfortunately, with larger classes and so much to get into the three years' programme, there is not too much time for individual guidance. It does seem, however, that there is necessity for greater and continuous effort to broadcast generally information about public health nursing and to have such instruction find some place in the training school programme. This would not be with the expectation of graduating fully-qualified public health nurses but merely of providing sufficient instruction to familiarize undergraduates with the responsibility the public health agencies, official and voluntary, share and assume in the community health programme. Where there is undergraduate affiliation with a health agency, a nurse gains an insight into home conditions of the hospital patient which must be to her advantage in doing intelligent nursing later, in whatever field she decides to practise. It is not possible to bring this help to undergraduate students unless the superintendent,

instructors and head nurses are sympathetic and quite familiar with outside work themselves. On the other hand, public health nurses need to be ready to respond when appealed to for help in teaching. Such joint co-operation then might well result in the bringing in of workers from public health agencies to interpret their work to senior nurses at least, possibly also to hospital administrative staffs and alumnae associations.

Another point which needs to be emphasized in approaching the undergraduate is the fact that post-graduate training is necessary even for the nurse graduating from the larger and best known schools, and that she needs to go through practically a probationary term and to be employed at a lower salary with whatever organization she means to link up, until such time as she is better able to carry on as a staff nurse. Public health, as does any other type of nursing, demands the best type of womanhood with good educational and professional background, with the right personality—in other words, the many-sided woman. Her relationships are numerous. All are equally important if she is to be an outstanding success.

Then, in regard to the universities, are they satisfied they are getting sufficient well-qualified applicants? In general, no. During the year, from the five universities in Canada giving public health training, sixty-four (64) nurses graduated. Two or three times that number could have been placed, which means that other nurses less well-qualified will have to be secured instead to fill the vacancies existing throughout the Dominion. This is not fair to the community employing them or to the nurses themselves. Neither are the universities getting the number nor the quality of students they could well absorb. Once the hospitals more generally maintain a higher educational standard, the problem of meeting the educational requirements for admission to university will be simpler. Dr. Burgess says: "Certainly the public health movement cannot hope to develop as fully and richly as it should until the schools of nursing limit entrance more carefully and accept only good material. Graduate nurses will always shift from one field to another and we cannot hope to raise standards in one of the graduate groups unless we have a reasonably sound preparation for everyone who is registered."

With regard to nurses taking university public-health training, the economic situation also presents difficulties. However, in this, as in other things, if the desire is sincere, the ambition will sooner or later be realized. Were more scholarships given, additional nurses could take special training. The situation now is that after several years' emphasis on the value and, indeed, necessity of university post-graduate training, many organizations, official and unofficial, are demanding the type of nurse they were led to expect they might and should employ, only to find she is not available. Consequently, they feel they are not getting a square deal. It would seem that university departments of

public health might well be disposed to allot certain funds to enable their directors, or members of their staffs, to do some educational work in training schools throughout their province in order to interest nurses in public health work. Provincial nurses might well help as they go about. Many schools which are turning out good nurses, have yet few opportunities of contact with leaders in the public health movement. Surely there are occasional visiting public health nurses in most sections who, in accepting additional responsibility in this respect, might interest pupil nurses in the public health needs of their own area.

It is most essential that the provincial departments of health support strongly their university public health departments, both as regards stimulating attendance of students and as to sharing expenses of administration in provision of rural field work, and in doing their best to place such university graduates as they can secure at salaries commensurate with their ability, experience and preparation. So much of our work in Canada is of the rural type that until we have more rural training centres available, there will be something lacking on the practical side in the university public health training. Organizations have sometimes felt there has been too little field work provided proportionately and too little correlation of theoretical and practical work in the university courses given. This condition has improved yearly.

Too much, undoubtedly, is being expected of the university public health nursing departments. There has been a feeling abroad that every nurse leaving the university should be an expert in each and every type of public health work, and capable of being a leader in whatever community she is placed. This idea needs to be exploded. There are many who will make most efficient staff nurses but who will never be leaders. It would take more than an academic year to make them that. Notwithstanding the fact that the nurse taking special training may have graduated five or ten years ago (or even quite recently in some schools), she has not usually had the benefit of much instruction along the lines of development of the past ten or twelve years in the field of preventive medicine and her knowledge, in this respect, of obstetrics, pædiatrics and communicable disease, from the nursing viewpoint leaves something to be desired. Her previous experience has been in relation to curative work entirely, and her idea of service is chiefly that she should render it all rather than that she should endeavour to stimulate response from the individual and his family. Organizations have expected from the university the finished product—whether in child welfare, school, or visiting nursing—whereas the nurse taking up public health work has had first of all to go through a period of conversion and to adjust her viewpoint before she can begin to absorb instruction. Her personal qualifications for the work she is undertaking have not been given much consideration previously and she may be a misfit before she ever enters the university. Whereas she is

expected to be an authority in each special type of public health nursing, all she has been able to gain in the few months is an insight into the possibilities of each, and before she can do effective work she really needs to have a period of practical experience under supervision with the agency with which she means to work. This has not been sufficiently recognized. A nurse has immediately been launched, sent to a district where she must work alone or to an isolated rural field beyond reach of supervision, and where she is compelled to use her own initiative with little or no preparation for the problems she has to face. It is most unfair to the isolated nurse or to one working alone, not to provide nursing supervision both to encourage her and to strengthen her work. Medical direction alone is scarcely adequate.

Two ways of meeting the situation (too little field work experience) would be either through the universities withholding certificate until a definite period of field work is accomplished, or of having the organization proposing to employ a nurse, accept her on an instructive basis and at a lower salary for a period of time until she is better able to assume additional responsibility. With the demand for their services, the importance of this safeguard has not been taken sufficiently into consideration.

SUMMARY

There is a necessity for more intimate relationship between the training school and the public health agency through instruction and class contacts, provision of carefully planned and well-supervised affiliation, and the introduction of supervisors with the public health viewpoint into the larger schools.

Public health nurses should accept any opportunity offered of bringing before head nurses and members of alumnae associations information regarding the more recent developments in public health nursing and the need for recruits.

Return of public health nurses from time to time to their parent school for some practical experience, would help to keep them up-to-date as to procedure.

Every nurse is not in a position to take full public-health training. Once this is recognized by an agency employing a large number, consideration needs to be given to providing continuous staff instruction and admitting nurses regularly on an instructive basis.

Understanding and appreciation of the fact by themselves and those employing them that, not having received adequate preparation for public health work, nurses might well be prepared to accept a minimum salary throughout an introductory period because of the time necessarily devoted to their instruction.

University courses can be expected to give only an insight into a particular line of work, not to develop a specialist in any one line.

Each nurse needs to work out her own salvation and, whether intending to do specialized or generalized work, she needs continuously to study, and to improve her qualifications.

In developing periods of instruction, the greatest care should be taken by all agencies to work in the closest co-operation with the public health authorities, directors of public health nursing departments and leaders in nursing education so that standards will not be lowered nor the prestige of the service instituting the training, suffer.

If there were a trial period of field work offered previous to admission to the university, or by agencies employing nurses, those who appear to be misfits in public health work might well be directed to a field in which they are apt to be more successful.

The official departments need to uphold and to strengthen their provincial university departments of health in every way and to assist in the provision of rural training centres for nurses.

Every effort should be made in each province or section of the country to provide for refresher courses each year. As opportunity comes our way we might well emphasize to those ambitious to train, the importance of entering a recognized school with the best training available in pædiatrics, communicable disease and obstetrics.

Where nurses applying lack the nursing experience mentioned, they might well be urged to take post-graduate training in any one specialty.

Some attention might well be given to better distribution of the well qualified nurses available.

While today we are dealing with the problem of securing recruits for the public health nursing field, we do not for a moment lose sight of the fact that each type of nursing work has its individual appeal and its increasing requirements.

Our basic interests as fellow nurses whether engaged in hospital, private duty or public health work, are identical. What influences one eventually affects the other sections; we link up in the Canadian Nurses' Association. Nevertheless, the fact remains that the present opportunities of service and of development in the public health nursing field are not yet generally recognized.

Editorials

PSITTACOSIS

THE layman and the physician sometimes share in the dramatic side of medicine. The press, seizing upon an interesting disease with characteristic zeal, has popularized and coined, this time effectively, the word "parrot disease" for what has been known as psittacosis.

As a matter of fact psittacosis is not new. As a disease of parrots it has been known for a long time. It attracted no special attention until 1789, when Ritter and Ulster in Switzerland described a small epidemic of pneumonia associated with parrots imported from Germany. Ost and Wagner reported similar instances in 1882 and 1886. The epidemic of severe pneumonia occurring in Paris and associated with parrakeets was investigated by Nocard, in which epidemic among 51 cases there were 16 deaths. A micro-organism supposed by him to be the causative agent was isolated from both man and sick birds and was named B. psittacosis. Evidence has rapidly accumulated from several independent investigators, however, that B. psittacosis is not the etiological agent of the clinical entity in man or parrot.

In so far as the present epidemic is concerned the first cases observed in England and in Germany occurred in July, 1929. It is significant chronologically that in the Argentine cases were recorded at the same time. Hence, the Argentine epidemic was not the initial focus but was dependent upon the importation of diseased parrots from Brazil and from Paraguay. Approximately 400 cases are recorded up to the middle of February, 1930, with a mortality of 30-40 per cent. Obviously, then, psittacosis canot be regarded as being in the same category as other epidemics that have decimated mankind, nor even in any way comparable in its effect to our commoner diseases such as diphtheria and measles. At least twelve countries have reported cases, including Canada. In British Columbia, judging solely from an item appearing in the press, 11 human cases have recently been diagnosed.

Certain clinical and epidemiological facts have been established. The incubation period in man is approximately ten days. The onset is often sudden with fever and marked depression. Pulmonary changes are constantly present and constitute the most important single factor in clinical diagnosis. These are evidenced by dullness on percussion with diminution of the vesicular murmur, followed by absolute silence with, however, no pleural effusion; extensive involvement frequently of both lungs, hepatization and almost complete absence of sputum. Finally the most important, if not indispensable aid in the diagnosis

of psittacosis is a consideration of the possible exposure to the infection. This is the association, either directly or indirectly, of the patient with a sick or apparently healthy parrot or parrakeet.

To the laboratory worker the chief interest in psittacosis is due to the fact that the causative agent is a filtrable virus. In Germany, United States and England no evidence of the etiological significance of B. psittacosis was found, whereas in all three countries investigations entirely demonstrate the filtrability of the virus.

The outstanding contributions have been made by Bedson, Western and Simpson in England, Levinthal in Germany, Krumwiede and McCoy in America. The virus is present in the blood and organs of parrots and of man; it has been demonstrated also in the excreta of parrots, which fact probably has an important bearing in relation to the spread of the disease. Successful transfer of the infection has been made with filtrates, sterile in the usual bacteriological sense, from man and from parrot to susceptible animals. Krumweide has shown that apparently mice may be experimentally infected, which fact makes the problem of investigation much simpler. Guinea pigs, pigeons and, up to the present, monkeys have proved insusceptible. The virus remains active in 50 per cent glycerine for weeks and is resistant to cold. That this virus is not identical with fowl plague has been shown in that chickens cannot be infected. From an epidemiological point of view it has been observed in past outbreaks that whenever the disease occurs in man virtually all those exposed to infection, *i.e.* to a sick parrot in a household, directly or even indirectly, contract the disease.

In regard to the actual mode of transmission nothing definite is known. However, the infectiveness of the virus is of a very high order for man, as evidenced particularly by the number of laboratory workers who have succumbed. In Washington, at the Hygienic Laboratory, eleven cases of psittacosis developed, eight of whom could not be traced to any recognizable source of infection. Lillie, in Washington, has described in Kupffer cells of the liver minute cell-inclusions—coccoid and bipolar—in human lesions and in parrots; Levinthal in Germany found in the pericardial fluid of parrots small coccoid bodies which he regards as the causative agent.

The method of control seems simple, namely to put a rigorous embargo upon parrots. This has been done in most countries including Canada. On the other hand the traffic in parrots is large and the smuggling of birds and their illicit peddling is known to exist. Some 8,000 parrots were handled by one dealer in one year in Berlin. The fact that epidemics are confined to small groups such as households or families and that the infectivity of man to man seems not to be strikingly great, coupled with a relatively simple means of control, should allay the fears of the public and strengthen the confidence of the health authorities that the disease will not become a major problem of public health significance.

INDUSTRIAL HYGIENE

F. G. PEDLEY, B.A., M.B., D.P.H.; J. G. CUNNINGHAM, B.A., M.B., D.P.H

A SYSTEM OF VENTILATION IN A REGINA SCHOOL

IN his paper, "Ventilation", presented at the Fourth Annual Convention of the Saskatchewan Health Officials' Association at Moose Jaw, Oct. 3, 1929, Mr. J. R. Guildford discusses the various systems of ventilation in common use and gives his opinion of their respective merits. He describes in detail a split system of heating and ventilation recently installed in a Regina school.

In this system the radiators installed take care of the heat losses through the walls and glass. A system of ventilation has been installed which is controlled with a system of temperature regulation. Air entering at 40 degrees below zero is tempered to 45 degrees Fahrenheit before it passes through the air washer or humidifier. In passing through the re-heating coils just beyond the air washer, the air is brought up to a temperature of 95 degrees. Thermostats installed in the main ducts automatically maintain this even temperature by shutting off the steam valves to the tempering and re-heating coils with the aid of compressed air. Air at 95 degrees is discharged from the fan through an underground concrete duct into a main sheet metal duct in the sub-basement of the building from where the air is distributed through a system of branch ducts into the rooms. A special feature in the rooms is the type of locker. Each locker has a number of slots 5" wide by ½" deep in the door near the bottom. In the top of the locker a circular opening has been made connecting with a foul air duct running horizontally on the top of the lockers which connects with the vertical foul air duct leading to the attic space. The object of passing the air through the lockers in this manner is to ventilate the clothing of the children which may be hanging there. The classrooms, with the aid of the temperature-controlled radiators, and the duct thermostats controlling the air temperature, cannot possibly become overheated, with the resultant effect that no healthier atmosphere can be produced anywhere.

Dr. Bulmer (personal communication) investigating the atmospheric conditions of schools in Ontario, has found that overheating is very common, even with split systems of heating and ventilating with thermostatic control, and that the use of the window at times is the only method by which this overheating can be combated. In an article published in this Journal October, 1929, he points out, in detail, why the present systems of mechanical ventilation found in schools, permit overheating.

EPIDEMIOLOGY AND VITAL STATISTICS

F. W. Jackson, M.D., D.P.H., and Neil E. McKinnon, M.B.

CHICKENPOX

Incubation Period, Period of Infectivity and Prevention

The period of infectivity, incubation period and specific prophylaxis of chickenpox form the subject of a timely discussion and report by Dr. Gordon and Dr. Meader in the Journal of the American Medical Association of December 20, 1929. Their own data are collected from observations made under unusually favourable circumstances over a number of years at the Herman Kiefer Hospital, Detroit.

TABLE 1—INCUBATION PERIOD OF CHICKENPOX

Time	No. of Cases	Time	No. of Cases
11 days	2	16 days	9
12 days	3	17 days	10
13 days	11	18 days	5
14 days	10	19 days	1
15 days	14	20 days	2
		Total	67

In one case a boy of six was transferred from a large scarlet fever ward to a ward for convalescents. In neither ward had there been any chickenpox for several months. Twenty-five hours after the transfer a beginning chickenpox eruption was noted on the transferred child. In the scarlet fever ward from which he had been transferred, there were sixteen other boys, aged four to ten years, eight of whom had never had chickenpox. Boys in contiguous beds were not immume. No chickenpox developed, however, in this ward, but three secondary cases developed in the convalescent ward. The authors note that "it would appear in this instance that varicella was not infectious twenty-four hours preceding the eruption."

In another instance a child removed from a ward nine hours previous to the beginning of an eruption in another patient, developed varicella seventeen days later. Six non-immunes were discharged from the hospital one day previous to discovery of the eruption, four were discharged 2 days previous, five, 3 days previous, and eight, 4 days previous. In none of these did chickenpox develop. Infectivity preceding the stage of eruption would appear, therefore, to be of very short duration within a period of twenty-four hours.

The authors cite other observations which indicate that the period of infectivity does not extend beyond the first week of the eruption but does extend to the fifth day of this stage. They found no evidence that it lasted till all crusts had disappeared as is so often stated to be the case.

In a series of 67 secondary cases in which the time of exposure was definitely established and limited, the eruption occurred from the eleventh to twentieth day after exposure. Fifty-four, or eighty per cent, of these occurred in from thirteen to seventeen days.

Drs. Gordon and Meader have collected valuable data in regard to the prophylactic value of convalescent serum in the control of chickenpox. The table below, taken from their report, summarizes their observations.

The susceptibles were mainly children whose history of not having had chickenpox was reasonably reliable. The authors point out that, in spite of

the usual high infectivity of chickenpox, all exposed susceptibles do not develop chickenpox; in their experience 32 per cent of exposed susceptibles did not develop chickenpox when a brief period, probably not more than twenty-four hours.

"Infectivity during convalescence is less prolonged than commonly considered, does not necessarily coincide

TABLE 2—IMMUNIZING VALUE OF CONVALESCENT SERUM OBTAINED AT VARYING INTERVALS AFTER ATTACK OF CHICKENPOX.

Number of Susceptibles Immunized	Month of Convalescence Serum obtained (Pooled serum from 3 to 8 donors)	Amount of Serum Injected, Cc.	Number Developed Chickenpox	Percentage not Developing Chickenpox
16	1- 2	10	1	93
20	2- 3	15	3	85
59	3- 6	15	7	82
14	2- 4	15	3	82
23	2- 4	10, 10	5	78
30	5-10	15	13	57

no specific measures were used to prevent infection. In the cases that did occur in spite of having convalescent serum, the course of the disease was in no way modified, nor was the expected incubation time appreciably affected.

The conclusions of Drs. Gordon and Meader are as follows:

"Preceding the eruption, chickenpox is apparently infectious for only with the persistence of crusted lesions, and probably ceases within ten days.

"Convalescent serum furnishes a high degree of protection if obtained within one month of the appearance of the eruption. Obtained thereafter it is less efficient, and after five months confers protection in only a third of the immunized (treated) susceptible patients."

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—MARCH, 1930

Disease	P.E.I.	Nova Scotia	New Bruns	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	4	36	11	203	246	29	32	43	65
Scarlet Fever	4	159	57	507	1,432	55	93	156	63
Measles	115	51	—	589	4,412	76	176	8	89
Whooping Cough	63	19	—	401	309	191	70	54	265
German Measles	—	—	—	77	621	†	18	1	103
Mumps	1	4	75	617	230	137	108	115	184
Smallpox	—	—	—	1	149	3	55	11	17
Cerebrospinal Meningitis	—	4	2	11	10	1	4	3	3
Anterior Poliomyelitis	—	—	—	1	—	1	1	2	—
Typhoid Fever	—	—	8	58	55	1	9	12	5

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.

PUBLIC HEALTH EDUCATION

MARY E. POWER, B.A.

AN EXHIBIT DEPICTING OUR MATERNAL AND INFANT DEATHS

THE Child Hygiene Section of the Canadian Council on Child Welfare which is operating with a generous donation from the Canadian Life Insurance Officers' Association, showed very definitely Canada's losses in material and infant mortality in a startling way in its exhibit at the Canadian National Exhibition in Toronto.

The exhibit occupied a large space. The centre back wall was taken by a large panel on which were eleven attractive babies' heads. An electric flasher going on and off behind one of these heads brought home the fact that Canada loses, annually, one out of every eleven babies born alive. Below this there was a panel showing in massed form 906 babies. This formed the top of a flight of several steps representing the first twelve months of life and set forth that 94 out of every 1,000 babies born in Canada never reach their first birthday. On the steps, the most attractive baby dolls in swaddling clothes showed where these losses occur. The wording from the lowest step up was as follows:—

1. Forty-five babies die between birth and one month, 31 of these babies die in the first week.
2. Seventeen babies die between one month and three months of age.
3. Fifteen babies die between three months and six months of age.
4. Ten babies die between six months and nine months of age.
5. Seven babies die between nine months and one year of age.
6. Nine hundred and six babies reach one year of age.

On the left of the central panel on the back wall there was a map of Canada almost entirely covered by a huge blot. This blot represented our national loss of 1,300 mothers who die in child-birth each year; 22,010 babies who die before their first birthday; 7,336 still-births.

On the other side balancing this was a most interesting panel headed,—"Why Should Motherhood Cost so Much in Canada"? Underneath in figures of proportionate size dressed in national costumes of their countries were set forth the national losses of Canada, England, Wales, France, the United States, Scotland, the Irish Free State, Norway and Italy. From these it is evident that Canada and the United States rank among the countries with the highest maternal mortality. In the immediate foreground in front of the map was a cradle with little pink dolls representing 180 babies with the figure of a mother stooping over them. Panels at the cradle had the question, Why should Canada lose one mother for every 180 babies, and why should four such mothers die each day?

Behind the cradle was a completely furnished house in which there were a father, baby, and two children of school age. The accompanying panel set forth that on the average each mother who dies in child-birth leaves such a home, and that in one year in Canada 768 babies and 5,073 older children were so left motherless.

The lessons of the exhibit that Can-

ada can reduce these unnecessary losses by insistence that adequate medical and nursing services be available for every mother, before, during and following the birth of her child, were plainly stated in large placards.

At the opposite side of the exhibit from the house and the cradle a delineascope, operating automatically, carried continuous lessons in its films of what constitute proper health habits and practices.

The exhibit proved most effective in bringing home not only the extent and nature of the problem which involves us in losses that are extremely serious in a young country requiring population, but stressed the constructive measures which must be employed to cope with the problem.

NATIONAL VOLUNTARY HEALTH AGENCIES

RUBY E. HAMILTON, Reg.N.

ST. JOHN AMBULANCE BRIGADE OVERSEAS IN THE DOMINION OF CANADA

THIS Association began work in Canada in 1877, and was incorporated under special Act of the Dominion House of Commons in the year 1914. It is purely educational in its character and has for its main object the extension of knowledge, in first aid to the injured, home nursing, home hygiene and sanitation.

The curriculum consists of regular courses, both senior and junior, with prescribed text books. After the completion of a course, an examination is held by a qualified medical practitioner and certificates awarded to those in senior classes obtaining not less than 60 per cent in the subject taught; in the case of juniors, 50 per cent is required for a pass for the Preliminary Certificate. The certificates are simply ones of competency, and do not confer any privileges upon those obtaining them, the object being to encourage the recipients to improve their own knowledge, and allow of them rendering voluntary assistance wherever and whenever the opportunity may occur for their being of service to their fellow neighbours.

An unique feature of the educational character of the Association is the method adopted of providing for the annual re-examination of certificate holders without necessary attendance at a course of lectures, thus maintaining their efficiency. A voucher is granted after the first re-examination, a medallion after the second and, yearly thereafter, either a label (first aid) or a pendant (home nursing).

The whole teaching of the Association directs the public to the medical practitioner as their stand-by in cases of sudden illness or accident, and in the sphere of home nursing, emphasizes that they are supplementary to the excellent work of professional nurses. Anywhere and everywhere the services of our members are purely supplemental to the professions and

purely voluntary, the aim being to make for better community work and the relief of pain and suffering, often prevention of death itself.

For the carrying on of the work, the Association has established branches in all of the provinces of the Dominion except Prince Edward Island. In the commercial world we have perhaps, our greatest activities amongst the employees of the Canadian National Railways, and the Canadian Pacific Railway, to whom we have granted some seventy-five thousand certificates in first aid and home nursing.

Among the other important groups who are actively engaged in first aid propaganda amongst their employees, we would mention the Bell Telephone Company of Canada, The Northern Electric Company, The Royal Canadian Mounted Police. These corporations constitute special centres of the Association, as also does the Department of National Defence. In connection with the latter, the Branch of Cadet Service is particularly interested in the education of cadets in the subject of first aid. The Association stimulates interest by offering a trophy for annual competition amongst teams of four cadets in each military district and a Dominion trophy. In many of our cities and towns certificated members are found amongst the police and fire departments, as they are, too, amongst most of the mining camps, the lumber camps, and large industrial companies. There is at the present time a marked advance being made amongst the industrial concerns of the Dominion owing to the fact of their appreciating the benefits derived in industry by reason of the employees being trained in first aid, thereby lessening disability and reducing the cost incident to compensation charges.

In the field of home nursing it is found that the public is realizing more than formerly the untold benefits to be derived from the women and girls of our country possessing a knowledge of this important subject. Owing to ignorance of home nursing much unnecessary suffering exists which cannot adequately be met by any of the organized systems of district and home nursing. The field is so great that the Association believes a better and more general knowledge on the part of all women would be followed by better home conditions. Indeed, we believe all women should be instructed and practically trained in the fundamental principles of the subject.

To maintain the interest of our certificate holders and to increase their efficiency, principally in first aid and home nursing, the Association offers for annual competition a number of valuable trophies for team efficiency in these subjects. The trophies are valued at many thousands of dollars, and represent in the main, gifts to the Association by interested citizens. These trophies serve to perpetuate interest in the work.

In conclusion, it may be interesting to state that we are certifying the instruction of more than twelve hundred persons each month, and the total number of those educated is in the neighbourhood of one hundred and fifty thousand persons, all of whom are actively co-operating in the health work of Canada, and thousands of these maintain their efficiency by undergoing re-examination each year.

CANADIAN TUBERCULOSIS ASSOCIATION ACTIVITIES

THE Christmas seal sales last year in all nine provinces did not reach the objective set before the market crash, but netted over $180,000 in addition to that collected by the Nation Sanitarium Association.

The subject of bovine tuberculosis occupied the entire monthly meeting of the Ottawa Medico-Chirurgical Society recently and the Canadian Tuberculosis Association, at the request of the Society, is having printed the contributions by Dr. Campbell Laidlaw, Dr. R. M. Price of Toronto, Dr. Hilton of Ottawa, and Dr. Wodehouse, the Secretary of the Canadian Tuberculosis Association. Copies are being sent to every physician and veterinarian in Canada.

The Three Rivers Demonstration will have 150 sanatorium beds operating in May in the new Cooke Hospital built there.

The Maritime Tuberculosis Educational Committee will meet in the Maritimes in March.

The arrangements for the visit to Canada and the United States, of fifty British medical men working in the field of tuberculosis, are nearing completion. Fifty scholarships of $500 each are provided by the Sun Life Assurance Company of Canada to assist in the study tour. Stops will be made at Quebec, Montreal, Ottawa, Toronto, Muskoka, Ninette, Winnipeg, Chicago, Detroit, London, Hamilton, Niagara Falls, Buffalo, Perrysburg, Syracuse and New York. The doctors will be five weeks away from home. Canadian physicians with special interests in tuberculosis are invited to book transportation on the train conveying the British physicians and visit the various centres with them. It will be an excellent opportunity for further professional and social fraternization between the Canadians who went to Europe in 1928 under the same financial auspices.

It is expected that Dr. Varrier-Jones, the Medical Director of the Papworth Colony for the care of families having tuberculosis and providing their employment, will visit Canada this year, and speak in all the provinces upon his remarkable colony achievements. This work was originally conceived by Sir Clifford Albut, and is an activity of the University of Cambridge.

Six public meetings for nurses, social workers and others interested in tuberculosis activities are being arranged in Montreal under the organizing hand of Dr. Grant Fleming.

THE NORTHERN ONTARIO VICTORIAN ORDER REGIONAL CONFERENCE

The objective of the second Victorian Order Regional Conference held recently in Cobalt was not only to give Victorian Order board members and nurses an opportunity to discuss their responsibilities, their interests and their problems, but to bring together representatives from voluntary and official health agencies, service clubs, and organizations as well as interested individuals.

The conference was organized at the request of the Cobalt local association, and representation was secured from the six adjacent Victorian Order centres. The attendance at all sessions was good; interest and enthusiasm ran

high, and splendid discussion resulted from the introduction of "round table" topics.

At the banquet which officially opened proceedings, those present included Dr. Grant Fleming of Montreal, the Chief Superintendent, Miss Elizabeth Smellie, the Central Supervisor, Miss Ethel Cryderman, representatives from board members and nurses of adjacent districts, the Provincial Department of Health, the Ontario Medical Association, the Ontario Red Cross, the Metropolitan Life Insurance Company, the Social Service Council of Ontario, medical officers of health, provincial and municipal, public health nurses, charge nurses from outpost hospitals, as well as many other representative individuals from northern Ontario.

A public meeting followed the banquet, at which Dr. Fleming delivered an excellent address on "The Need for the Voluntary Organization."

At the "round table" the next morning, presided over by Miss Smellie, carefully selected questions pertinent to the functioning of a visiting nursing association were discussed freely. Practically everyone present contributed to the discussion, and later many spoke of the new ideas and fresh interests which had been stimulated through this frank and open conference.

The Cobalt Regional Conference was a great success. Due to this opportunity to get together, become acquainted, tell about one another's interests and discuss amicably one another's problems, many went away not only with a better understanding of their own association and with a keener, finer appreciation for other health agencies, but with a realization that it is only in assuming a broad health outlook that any organization can attain its fullest possible development.

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

Canadian Appointed to Connecticut State Health Department

DR. WALTER W. LEE who has been Epidemiologist and Assistant Secretary of the Indiana State Board of Health has recently been appointed Epidemiologist to the State Health Department of Connecticut. It is gratifying indeed to see the manner in which our graduates are filling important positions, such as this, in the field of Preventive Medicine in the United States. At the same time one may well ask, why, in Canada, where there is unquestionably so much work to be done, positions are not readily available for qualified men.

Royal College of Surgeons, England

LAST year's historic variance of policy on the part of the Royal College of Surgeons, England, when facilities for the Primary Fellowship Examinations were for the first time afforded to candidates outside London, England, is to be repeated in 1930. Applications for these examinations are now receivable for the

second Primary Fellowship Examinations in Canada. These will probably be held during the month of September next in Montreal, P.Q.

98th Annual Meeting of the British Medical Association

THE next Annual Meeting of the Canadian Medical Association is to be held in conjunction with the 98th Annual Meeting of the British Medical Association at Winnipeg, Man., during the last week in August. With the usual following of the C.M.A. to which will be added the large number of physicians from Great Britain this promises to be one of the largest gatherings in the history of the profession in Canada. This is the third time that the parent organization of medical men has met in Canada, in Montreal, 1897, and in Toronto, 1907. A tentative programme has now been published in the Canadian Medical Journal, which promises a most active and enlightening gathering.

The custom of the British Medical Association of distributing a book known as "The Book of the Meeting" is being followed in the preparation of "The Book of Canada" under the able direction of Professors Chester Martin and Stewart Wallace of the Department of History of the University of Toronto.

Prince Edward Island

THE contract for the Provincial Tuberculosis Sanitarium was awarded on March 27th last. This institution, which is to be of brick and tile with wooden interior, having accommodation for forty patients with nurses' and servants' quarters, is to be built in Charlottetown and is expected to be ready for occupation early in 1931.

New Brunswick

A bill dealing with the Old Age Pensions Scheme is to be presented by the Government at the present session of the Provincial Legislature.

Following upon the Child Welfare Survey of this province by the Canadian Council on Child Welfare in 1928, a bill revising the Children's Protection Act is being put forward.

Mrs. V. L. Michand, Reg.N., a graduate of the School of Hygiene in the University of Montreal, has been appointed under the Department of Health as public health nurse for the town of Edmundston, a sequel to the demonstration by the Provincial Department of Health, which provided a departmental public health nurse in Edmundston for the past year.

Quebec

WE have to note with regret the recent death in London, England, of Lieut.-Col. R. H. Ker, M.D., of Montreal and Vancouver. Dr. Ker, who was 52 years of age, was the son of the late Archdeacon Ker, D.D., of Montreal, and was a graduate of McGill University. During the war, Dr. Ker was responsible for the re-organization and administration of the medical arrangements for the return of the convalescent Canadian troops to the respective military districts in Canada. From about 1919-1924, Dr.

Ker was Senior Medical Officer associated with the early construction of the Takoradi Harbour Scheme in the Gold Coast Colony, British West Africa, upon which many Canadian engineers were engaged under Brig.-Gen. Stewart and Lieut.-Col. Angus Macdonell, and was responsible for the admirable medical and sanitary arrangements instituted during this project.

Dr. Ker is survived by his widow, two sons, a sister and two brothers, T. R. Ker, K.C., of Montreal, and F. I. Ker of the Hamilton Spectator.

Ontario

SINCE the Old Age Pensions Act came into force in Ontario in November of last year, 28,124 applications have been made for benefits under the Act; of these 27,004 have been approved and granted.

At the annual meeting of the local branch of the Victorian Order of Nurses in Toronto, it was reported that during the year under review 90,000 visits were made by nurses of the Order, 64,000 of which were made without charge, the total number of patients cared for being in excess of 9,000. Further it was noted that at the births of twenty per cent of the infants born in Toronto Victorian Order nurses were in attendance. In addition to this type of work, the Order affords practical demonstrations to mothers in the preparation and choice of foods for their families, as well as affording facilities for field work to graduate and undergraduate nurses under instruction in public health. The total expenditures as noted from the treasurer's report was $88,027.47.

At the annual meeting of the Dufferin County Trustees' and Ratepayers' Association at Shelbourne in March last, W. R. Liddy, School Inspector for the county, presented a resolution providing for the appointment of school nurses by county councils, the nurses to be under the supervision of the Department of Education, which would make substantial grants for this purpose to the counties. This proposal closely follows that drawn up by the Inspectors' Section of the Ontario Education Association.

The Academy of Medicine, Toronto, held a special meeting on March 27th last, dealing with State Medicine. The following is the list of speakers and their respective papers: Dr. C. P. Fenwick, "State Medicine in Norway and Germany"; Dr. J. Z. Gillies, "State Medicine in Great Britain and France"; Dr. A. J. Mackenzie, "The Situation with regard to State Medicine in Western Canada"; Dr. G. P. Jackson, "City Health Services"; and Dr. A. L. McKay, "Health Services in Ontario".

Dr. Harris McPhedran, the Chairman of the Public Health Relations Committee, opened the discussion noting that this subject was of general interest to both the public and profession and that, in view of the possibility of legislation along these lines, he considered that the profession should be fully conversant with the various schemes already in operation in Europe and elsewhere and thus

be prepared to offer intelligent and well considered advice when called upon.

The papers were most enlightening, although discussion tended to be somewhat more local than the subject may have warranted. To your correspondent, who admits some degree of bias, it would appear that State Medicine *per se* is a subject that many members of the profession tend to consider anathema. Nevertheless with a public that is demonstrating an increasingly more intense interest in the socializing of medical services, it does seem that as a body it behooves us not to repeat the error made by the profession of Great Britain when the National Health Insurance Scheme was conceived in 1911.

Manitoba

A DEATH from undulant fever occurred in Manitoba during the month of December, 1929.

The full-time Health District of St. James, a suburb of Winnipeg, has been established. C. R. Donovan, M.D., C.M., until recently engaged in practice in Stonewall, Man., has been appointed Medical Officer of Health; Miss Anna Blais, Reg.N., of the Public Health Nursing Service, Public Health Nurse; and Mr. James Arkle, who has been engaged on relief work and sanitary inspection, Sanitary Inspector. Dr. Donovan and Miss Blais are at present engaged in a field course at Lansing, Mich., under the direction of the Rockefeller Foundation, and Mr. Arkle is attending a similar course in Ohio.

This district, it is expected, will commence operations during the month of May. As was anticipated other suburban and urban centres are showing considerable interest in the idea of the health unit, while some of the rural areas are more partial to the municipal physician scheme.

On March 7th a meeting was called for all the members of the Provincial Board of Health. It was decided that in the future this Board should meet semi-annually and that an invitation should be extended to the Manitoba Medical and Dental Associations to nominate representatives from their respective associations to participate in the discussions of the Board. Further, it was decided to revise the regulations regarding the control of communicable diseases and to issue a pamphlet dealing with this subject for circulation amongst all the physicians of the Province. The committee appointed to draft these regulations is as follows: Dr. A. J. Douglas, chairman; and Drs. T. A. Pincock and F. W. Jackson.

At this meeting the Board sanctioned the use of hydrocyanic acid gas as a fumigant, regulations to be outlined at a later date by the officials of the Department of Health and Public Welfare.

New regulations dealing with the maternity homes and children's boarding homes are now under consideration, the necessity for this arising out of recent legislation transferring the supervision of such institutions from the local health authorities to the Department of Health and Public Welfare.

The thirteenth Annual Staff Conference of the Manitoba Public Health Nursing Service was held during Easter week at the Legislative Buildings in Winnipeg. The programme for the conference took the form of a series of demonstrations, with round table conferences and instructive talks by officers of the Departments of Health and Public Welfare, Education, and the Extension Service of the Department of Education. The demonstrations were conducted by members of the nursing staff to present in a graphic way each phase of the nursing and educational work carried on by the nurses, and were followed by discussions as to methods and problems. Everyone of the staff entered into the spirit of dramatization, much to the delight of the audience. Incidentally, these demonstrations gave convincing proof of the value of dramatization as a means of education. Certainly as an enjoyable as well as an instructive form of staff education the use of the demonstration method is to be recommended.

During the same week, the Annual Health Exhibit of school-health-training work was shown at the Provincial Convention of the Manitoba Educational Association. The very fine examples of work were an indication of the remarkable progress that has been made in school-health training and instruction in the Province. The exhibit was assembled through the Public Health Nursing and Health Education Services of the Department of Health and Public Welfare.

Saskatchewan

DR. J. V. CONNELL, speaking before the Regina and District Medical Society, remarked on the trend of public opinion towards the institution of medical services controlled either by the state or corporations. This tendency, which he thought would be greatly regretted by those most ardently supporting its institution, was brought to the public's attention through some five agencies; the increased importance of the provincial and federal departments of health, the employment of physicians by large corporations, the friendly societies' and mutual benefit clubs' medical arrangements, the establishment of free medical services such as pre-natal, well-baby, diagnostic and immunization clinics, and finally, that during and since the war an appreciable proportion of the population has been afforded free medical service by pension boards and their precursors.

Alberta

DR. T. H. WHITELAW, former Medical Officer of Health at Edmonton, after a year's vacation has returned to Edmonton and is now engaged in practice. His office is at 544 Tegler Block.

In Alberta there are 388 physicians employed by the government, 44 of whom are on a full-time basis.

The report of the special committee appointed by the Provincial Government in 1928 to investigate the problems of state medicine has now been published. This report is in the nature of a review of the experiences of

state-aided medical services in Europe and a survey of such fields as county health units, health insurance and contract practice in Canada, with special reference directed toward the possibilities of state medicine in Alberta. It is of interest that the Labour members of the Legislature recently brought forward a resolution endorsing state medicine and health insurance, which was rejected with the passing of an amendment of the Minister of Health, who recommended the continuation of the present public health activities of the government and that thorough examination of the ramifications of state medicine be made before any definite move in that direction is taken.

The Edmonton members of the Alberta Association of Public Health Workers met March 26th, 1930, Dr. T. H. Whitelaw being elected president of the local body. The meeting was called in preparation for the provincial meeting of the association to be held at Calgary, the suggested dates being June 23 and 24, next. This convention is to take the form of the presentation of short papers on subjects of public health interest, each of which will be followed by discussion.

MISS LEXA DENNE

An Appreciation

Gifted with vision, patience and enthusiasm leavened by an inherent sense of proportion, Miss Denne was generously endowed by heredity. She came to the task which was to be her final one, particularly well adapted to serve those most in need of that which she had to offer.

Her academic training and teaching experience, added to her natural qualifications, made her admirably fitted for the task of guiding to successful fruition, a movement which had for some years, been in the minds of workers in the field of community welfare. Considered desirable by all, but Utopian by many, this service which was designed to lessen the hardship and suffering following so closely in the train of maternal illness, was initiated under Miss Denne's leadership. The success of the Visiting Housekeeper is best evidenced by the present status of this service in the city of its inception, Toronto; its extension throughout the Province and the interest it has evoked in other countries.

Miss Denne's contribution to public health was not confined to one particular field. She joined the Editorial Board of the JOURNAL at the time of its reorganization, and her conduct of the Section of which she was editor, was a constant incentive to the other members of the JOURNAL staff.

That she will be missed, is inevitable; that she will be difficult to replace, is no exaggeration.

BOOK REVIEWS

D. T. FRASER, B.A., M.B., D.P.H. and R. R. MCCLENAHAN, B.A., M.B., D.P.H.

Outline of Preventive Medicine— *For Medical Practitioners and Students. Prepared under the Auspices of the Committee on Public Health Relations, New York Academy of Medicine. Editorial Committee — Frederic E. Sondern, Chas. Gordon Heyd, E. H. L. Corwin. Paul B. Hoeber, Inc., New York, Publishers, August,* 1929. 398 *pages. Price* $5.00.

"Keeping people well is fundamentally the task of the general practitioner. . . . The general practitioner should school himself in this relatively modern task. . . ." These words from the introduction of this very original presentation of the practice of preventive medicine give the key note of the work. This volume has been prepared through the Public Health Relations Committee of the New York Academy of Medicine by a group of twenty-one physicians. Each contributor has outlined the practice of preventive medicine in his every day work as a specialist in a field of medicine. It is indeed significant that the New York Academy of Medicine should assemble and publish this volume for the purpose of making available the experience of these contributors for medical practitioners and students. Within the past few months a volume, embodying the findings based upon a study of the place of preventive medicine in the teaching of the various basic subjects in the medical curriculum, has been published by the Faculty of Medicine of Harvard University. Thus the importance of preventive medicine to the practitioner is being more and more appreciated and emphasized. Each field of practice is presented by a specialist. The names of many of the contributors are well known in Canada, particularly that of Dr. B. P. Watson whose section on obstetrics is of special interest.

The book is of very convenient size, excellently printed, and should be appreciated by every practising physician. R.D.D.

An Investment in Health — *Hot lunches for Schools in Rural Districts, by Myrtle Hayward, B.Sc. Published by the Canadian Council on Child Welfare, Ottawa, Canada. Single copies* 25 *cents, club rates* 20 *cents each.*

This is a thirty-two page bulletin advocating the hot lunch for school children. It is a carefully prepared publication, dealing not only with the value to the child of the proper noonday meal, but including also excellent and detailed suggestions as to methods that may be adopted in organizing the financing, preparing and serving of hot lunches under varying school conditions. Many practical suggestions are offered for obtaining the co-operation of pupils, parents, school boards and communities, as well as for solving most of the problems related to menu planning and classroom procedure. The reviewer knows of no publication along this line which presents so much usable material in a form so concise and so well organized. Every rural teacher and every person interested in the question of the school lunch should read this bulletin. *L.L.O.*

Undulant Fever and Contagious Abortion. *By L. C. Bulmer, B.S., N.D.D. (Eng.). Published with the approval of the Jefferson County Board of Health, Alabama, by the Technical Service Bureau, 313 Martin Building, Birmingham, Ala. Second edition, 66 pages. Price* $1.60.

This is an attractive paper-bound booklet of sixty-six pages, — a summary of the latest knowledge of undulant fever. To quote from the preface, "This book makes no promise of originality either in style or matter. Its contents, on the contrary, comprise a summary of correlatetd facts derived in a search of authoritative literature rather than a discussion of the pros and cons of the subject." The history, aetiology, clinical course, epidemiology, and suggested methods of control of undulant fever are adequately dealt with.

The peculiar development of the present situation with regard to undulant fever, dating back as it does to the discovery of the aetiological agents of two supposedly distinct diseases, Malta fever and infectious abortion of cattle, renders its proper understanding somewhat difficult. Only of late years has the relationship of Malta fever and human infection with the organism of bovine infectious abortion been recognized. Both the clinician and the public health worker have shown an increasing interest with the result that more and more cases of the latter infection are coming to light. Undulant fever now ranks as a public health problem of very considerable importance. Literature on the subject has already grown to voluminous proportions which, to one not familiar with the background, might be not only formidable, but highly confusing. This being the case, such a book as this, containing among other items an instructive chronological table of the important advances in our knowledge of the subject, is peculiarly appropriate.

To those whose duty it is to frame or to enforce public health legislation for the control of undulant fever, this concise book is especially recommended. D.W.C.

BOOKS RECEIVED

Getting Well and Staying Well. A Book for Tuberculous Patients, Public Health Nurses, and Doctors. By John Potts, M.D. 1930, St. Louis, C. V. Mosby Company; Canadian Agents, McAinsh & Co., Toronto. 221 pages. Price $2.00.

Bacteriology Applied to Nursing. By Jean Broadhurst, Ph.D., and Leila I. Given, R.N., M.S. 1930, J. B. Lippincott Company, Publishers, 201 Unity Building, Montreal. 532 pages, 289 illustrations. Price $3.50.

Sterilization for Human Betterment. By E. S. Gosney, B.S., LL.B., and Paul Popenoe, D.Sc. 1929, The Macmillan Company of Canada, Limited, St. Martin's House, Toronto, Publishers. 194 pages. Price $2.25.

The Bacteriophage and Its Clinical Applications. By F. D'Herelle, Professor of Bacteriology, Yale University School of Medicine; translated by George H. Smith, Professor of Immunology, Yale University School of Medicine. 1930, Charles C. Thomas, Springfield, Ill., Publisher. Pages 243. Price $4.00 postpaid.